CARLSBAD TREATMENT
FOR
TROPICAL & DIGESTIVE AILMENTS

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CARLSBAD TREATMENT.

SOME PRESS AND OTHER OPINIONS ON THE FIRST EDITION OF

"CARLSBAD TREATMENT."

"This splendid monograph on the Carlsbad Treatment of tropical ailments stands quite unique."—*Indian Medical Record* (Calcutta).

"The book is of a most useful nature, and inspires confidence by the candour and fulness of its information and points of guidance. If primarily intended for residents in the tropics, it will be found of considerable value to all others who purpose going to Carlsbad for the baths and waters."—*Irish Times* (Dublin).

"A book not only most useful and most instructive, but very readable and interesting. It is short because it is pithy. The subjects are fully and thoroughly treated. We feel no lack—nothing unexplained; but it is done in a clear and concise style, every word to the point."—*The Pioneer* (Allahabad).

"Much excellent advice on the subject of the Carlsbad treatment will be found in Surgeon-Major Young's book, 'The Carlsbad Treatment for Tropical Ailments,' published by Thacker, Spink & Co., Calcutta."—"Tropical Diseases," by P. MANSON, M.D. Cassell & Co. London. 1898.

THE DISCOVERY OF CARLSBAD.

THE CARLSBAD TREATMENT

FOR

TROPICAL AND DIGESTIVE AILMENTS

AND

HOW TO CARRY IT OUT ANYWHERE

BY

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SECOND EDITION, REVISED.

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PREFACE TO FIRST EDITION.

HAVING myself felt the want of some practical direction for carrying out the Carlsbad Treatment for Tropical Ailments in India, I thought that it might possibly prove of use to give the result of six years' practical experience of it.

Time and experience have not shaken but increased my confidence in the efficacy of this treatment.

It must be clearly understood that the directions in this book are not intended to supplant medical advice.

UMBALLA, *September*, 1894.

PREFACE TO SECOND EDITION.

THE intention of this book has been to relieve the physician from the trouble and delay of giving, the patient from the risk of imperfectly understanding or remembering, the rather complex details necessary to properly carry out the Carlsbad Treatment

in his own country. *Litera scripta manent.* I have to thank my brother Civil Surgeons of the Indian Medical Service, for having so universally recommended it for this purpose, to their patients.

The first edition was written solely for tropical patients. Its rapid exhaustion and kind reception induced me to extend the scope of the present edition, so as to make it equally useful to patients in temperate climates. It has in many respects also been brought thoroughly up to date.

As the present edition will also appear in America, I trust it may be found helpful where sustained work conduces to digestive troubles, and be of as much use to the soldiers and civilians of her tropical possessions, as the appreciative letters I have received, lead me to infer, it has been in India.

LOUIS TARLETON YOUNG, M.D.

FLUSHING, FALMOUTH, ENGLAND,
May, 1899.

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CARLSBAD TREATMENT.

CHAPTER I.

CARLSBAD, AND HOW TO GET THERE.

Hints on local customs, etc.

CARLSBAD, the most important mineral spring in Europe, is the chief representative of the great and important class of alkaline saline mineral waters.

At all times high in the esteem both of the medical profession and of the public, it has during the past ten years grown with phenomenal rapidity into a brilliant modern "*ville d'eau*" *de luxe* of the very first water. Over 40,000 visitors now annually frequent it. Huge hotels with electric light, lifts, and all the luxuries our exacting modernity demands, have sprung up, and are eclipsing the old-fashioned lodging-houses. The romantic valley of the Tepl and the neighbouring woods are intersected with numerous shady walks, provided with seats and with "Restaurations" at convenient spots. There are many pleasant excursions to be made in the vicinity, and some very fair trout-fishing is obtainable. The town from May to October, during the season, is alive, bright, and sparkling with representatives of the

wealthiest, wittiest, gayest, best-dressed, smartest, and most intellectual society the world produces. A truly cosmopolitan place it is in every way, both for the masses as well as the classes—a resort of all peoples, nations, and languages. Amongst this varied crowd, however, meetings of old friends and acquaintances are sure to be of almost daily occurrence. The Anglo-Saxon from all parts of the world is always strongly represented.

Those who visit Carlsbad may be broadly divided into two classes. The first comprises well-to-do people, *dwellers in cool climates*, who are usually overworked, overfed, and under-exercised, or those suffering from constitutional or other affections, such as gout, rheumatism, diabetes, jaundice, etc. The second class comprises the great contingent of *residents in the tropics or hot countries generally*, whose health is undermined by the effects of malaria, heat, and a bad climate. Officers of the Indian Army and of the various Civil Services of the Government of India furnish a large contingent to this class. There are usually some thousands of Indian officers and officials in Europe on leave every year, and the percentage of these going to Carlsbad is yearly increasing.

The effects of the waters may be concisely stated to be a thorough cleansing of the digestive and blood-purifying organs, so that "youth is renewed like the eagles." They are somewhat aperient in their action, and so differ from the purely alkaline waters like Vichy and Contrexéville. There are, however, a large number of persons who, either from dislike to foreign travel, or to such a long and fatiguing railway journey, or for many other reasons, cannot

manage a visit to Carlsbad—*non cuivis attigit adire Corinthum.* It is mainly for these this book has been written. It is quite possible to go through a very efficient course of Carlsbad treatment almost anywhere. The efficiency will vary according to the degree of care and accuracy with which the course is carried out; with the attention given to suitable diet during it, etc. Modern medicine and surgery differ from these arts as practised some decades ago, in the improved precision and accuracy of the measures employed. Things are no longer left to chance, as they once were. Contingencies are provided for, complications foreseen and prevented. Every item of the treatment has a well-considered, scientific *raison d'être.* The old style of prescribing the use of Carlsbad salt was, "Take a teaspoonful of this white powder every morning, fasting, in a tumblerful of tepid water." As a rule, no further details were given, and none of the essential directions about diet were added. This is now, happily, a thing of the past. The following pages will, I hope, enable medical men to place in the hands of their patients reliable detailed directions how to carry out this treatment.

Another reason against going abroad is that many of the Anglo-Saxon race, particularly ladies, have a rooted dislike to being treated by a foreign doctor.* They prefer, naturally, one of their own nationality, intimately conversant with the varieties of food, habits,

* "A foreign doctor, however clever, finds it difficult to treat an Englishman only because he has never understood and never studied a Britisher" ("Life of Sir Richard Burton," by his wife, Isabel, Lady Burton).

pursuits, recreations, and conditions of life amongst which they now live and have been brought up. It has also been urged that there exist essential differences in the racial constitution, tolerances, and reactions to treatment, of the digestive organs of the Anglo-Saxon as compared with those of Continental nations.

Then, too, Carlsbad is a long and expensive journey. To all, however, who can afford the time and expense, I would advise that *the first course* of treatment should be carried out at Carlsbad itself. The method of doing so properly will thus be best learned. For those who can do so, the following information about Carlsbad—how to get there, and a very brief description of how the course is there conducted—will be found useful. *To those who cannot go to Carlsbad it will be the best guide as to how to conduct the course in their own country.*

How to get to Carlsbad.—Carlsbad is situated in the valley of the river Tepl, in Bohemia, in the extreme north-west corner of the Austro-Hungarian Empire. It is reached from London (781 miles), by the *Carlsbad Express*, a *train de luxe*, starting daily at 10 a.m. from Victoria Station, London, *viâ* Ostend, and arriving at Carlsbad about noon the next day. Only first-class passengers who pay the sleeping-car supplement are carried, and they must book their berths in advance. Total fare for above, £7 9*s.* 9*d.* Fifty-six pounds of luggage carried free; 6*s.* 1*d.* charged for every extra twenty pounds or fraction of this amount. Those wishing to have a shorter Channel crossing, *viâ* Dover, Calais, can do so by leaving at 9 a.m., and joining the Carlsbad Express at Brussels. The Carlsbad Express runs only from

May 15th to September 16th. It is false economy to try going second class. It will involve stopping overnight on the way, or enduring the most miserable discomforts on the journey. The expense of staying a night or two *en route* will more than cover what would have given the comfort, rapidity, and convenience of first-class and sleeping-car.

"As a rule, we prefer night travelling for invalids. The trains are then of the best, many of them run sleepers, and it is best for a person in ill-health to get over a journey than to ride all day, perhaps on the sunny side of a carriage, and arrive tired at night to stop over in a strange hotel. We have found from long experience that one is more tired out by stopping over one night on the road than by going through. This, of course, refers to stopping one or two nights on the road, and not to the plan of taking a short day journey, and staying from three days to a week at each place. This delightful way of travelling is highly to be recommended." *

In the case of those who cannot sleep in trains the above should, in my opinion, be modified in favour of day travelling.

Extra luggage is on the Continent a very great trouble and expense. American ladies will find large trunks, built heavy for sea-travelling or to withstand the "baggage-smasher" of their native land, expensive luxuries. The degenerate and effete European baggage-smasher is not nearly so fierce or truculent a desperado as his American *confrère*. Such heavy trunks might be stored with a travel agent—for instance, Messrs. Cook & Son—and replaced by light basket or compressed cane articles. If a long tour of travel on the Continent is intended, this would be

* "Health Resorts of Europe," by Thomas Lunn, M.D. London: H. Kimpton, 1898.

found economical in the saving of weight, which would have to be paid for, if the large and heavy trunks were taken.

Smart gowns are rather *de rigueur* at Carlsbad, and for a lady at all known in society, to go without them is, perhaps, a mistake.

Anglo-Indians can do a three-weeks' course at Carlsbad and have a three-weeks' *after-cure* in Switzerland or in the country in England, even **on three months' "privilege leave" from India,** which is now less than fourteen days' steam from Brindisi. The Austrian Lloyd accelerated service from Bombay to Trieste is also very convenient for Indian officers visiting Carlsbad, which is only twenty-seven hours by rail from Trieste.

Those who land at Brindisi in July, August, or September, will find the journey through Italy a hot one. Thin clothes ought to be kept out for it. Some consider a Drew's *en route* tea-basket, some tins of unsweetened Swiss milk, biscuits, cooked meats, etc., to be wise provisions for the journey. No drink really stimulates and relieves thirst so much as tea, especially when one is hot and tired. On the eastern side of Italy railway refreshment-rooms are apt to be unsatisfactory in the hot weather, and the trains have an unfortunate way of starting off whilst the traveller is seated at a meal in the refreshment-room.

Passengers by P. and O. mail from Bombay to Brindisi can often catch the same company's Venice boat from Brindisi, and travel in it to Venice without extra charge.

Those who travel *viâ* Vienna will find a few days' stay there well worth the trouble and time. The

Viennese excel in decorative art, and their city is by many considered the most beautiful in Europe. Socially, the verdict of the Teutonic world is, "*Die Wiener sind gemüthlich.*" This I can cordially endorse, and the recollections of my own student's days there are of the very pleasantest.

On arrival at Carlsbad put yourself and your impedimenta in charge of the bus of some hotel—such as the Bristol, Savoy, Hannover, Pupp's, or Continental. The hotel porter with the bus may be able to save you trouble with your luggage in case you don't speak German. If the busses are crowded, a "fiaker" (two-horsed carriage) or a "droschke" * (one-horsed carriage) can be engaged. On arrival at the hotel be careful to explain that you only want rooms for a night or two at first. You will then have time to see the place a little before deciding where to stay permanently. The Schlossberg, or West End, is the highest and healthiest part of Carlsbad, and I would advise rooms to be taken there. It is also the English and American quarter. Lower down in the valley and in the Alte Wiese are often hot and relaxing in summer.

The **rules about renting apartments** are peculiar, and worthy of note, in order to avoid unpleasantness. Rooms when engaged are considered to be taken for the entire duration of the course, viz. three weeks, and if given up, the rent for this entire period is charged whether you occupy them or not. Your having paid this three weeks' rent gives you no claim upon them in case you have given them up, nor can

* Fiaker fare, 1 gulden 80 kreutzer; luggage, 50 kreutzer. Droschke fare, 1 gulden 10 kreutzer; luggage, 30 kreutzer.

you sublet them. If definitely engaged by the week —a fact no stranger would be likely to be able to prove unless he could write out the agreement in German at the time it was made, and have it signed —then only one week's quit-rent would be charged. Beware of lodging-house touts, who may lead you off to distant or inconvenient parts of the town, and induce you to take rooms which you will find yourself unable to give up afterwards, save at a loss.

Bachelors usually, in lodgings, take only one large room furnished as a bed and sitting room. For one such room I paid in August (the middle of the season and most expensive time) 18 gulden a week. The gulden coinage Anglo-Indians will readily understand, as the gulden, or florin, was the same as the rupee when that deteriorated, though necessary, coin was worth one and eightpence. Twelve gulden are still, I believe, worth £1 ; 100 kreutzer make one gulden ; 2½ gulden = 1 dollar.

Rooms in a hotel generally have better sanitary accompaniments, and have the advantage of the public rooms to sit in.

When engaging rooms inquire what is the extra charge for attendance, or if it is included in the rent. A waiter at a Vienna hotel, considering the gratuity given him by a departing guest too small, had his luggage detained, and sued him for what he considered the proper recompense for his services. Judgment was given against the traveller, who, if I remember rightly, was either an Englishman or an American. This decision is an important one for travellers in Austria to bear in mind. The case occurred quite recently, and

excited much comment at the time. Whether you pay extra for attendance or not, the servants will expect gratuities on your departure. At the lodging-houses most of the landladies have English-speaking daughters or sons, through whom negotiations are conducted, if you cannot speak German.

Meals are generally **taken outside** at a "Restauration" or "Gast Haus," where terms are strictly cash. This system is convenient, as you can feed wherever you may happen to be at the proper hour, and it also gives an agreeable amount of variety. The bands play at different Restaurations every day, and if you find the music of any particular band especially persuasive, you can follow that band about from one restauration to another, daily. The band programmes and movements are plentifully advertised locally. The food at König's Villa Restauration is good, and largely patronized, for breakfast, by English and Americans. Pupp's and many other places are also equally good. Pupp's generally has the best music.

Cooking is an art in which the Anglo-Saxon race does not excel. The only things we can cook are joints, steaks, and chops—and these are the only things which are not well cooked on the Continent. In fact, our cooking generally, is a great national and racial blot.

Customs at Restaurants.—At an Austrian restaurant a call of "Kellner" will bring a waiter. When ready to go the call of "zahlen" (to pay) brings a head waiter, or "zahlkellner," to whom a small gratuity of from 10 to 30 kreutzers (*2d.* to *6d.*) is made, although he has done nothing for you. The poorer Austrians themselves usually give only 5 kreutzers

= 1*d.* Ordinary waiters, except from extremely liberal people, receive no gratuity. Their ambition is to become "zahlkellners," who get all the gratuities given as a matter of course by every guest. *Table d'hôte* meals are the exception at Carslbad. In 1888 there was not a *table d'hôte* in the town. This is a good system for such a place, as it permits more individual freedom, and does not tempt to immoderate feeding. The cost of food is rapidly increasing, but by knowing where to go and what dishes to select the cost of living can be kept within reasonable limits. Even a very moderate dinner, with some cheap wine, like Vöslaner, will come to about four gulden.

Owing to the Government tobacco monopoly, a good cigar or cigarette is difficult to obtain. The Egyptian cigarettes sold are usually stale and dry. American tobaccos, English manufactured, of good quality, can be had.

Having settled in your rooms, and having had a good night's rest after a long and tiresome railway journey, you should the following day **consult one of the local physicians,** who thoroughly understand the action of the waters and the proper courses to adopt. There are about ninety doctors in Carlsbad. Drs. Kraus and London are the leading men in the profession, I believe. All the Carlsbad doctors are very busy men, and you should draw up a succinct statement of your case in writing, omitting all irrelevant details, and present it on your first visit. It will be still better if you can get a few brief lines from your doctor who has sent you to Carlsbad, describing your case, and, above all, any peculiarities of your constitution. Medical fees on the Continent are very

moderate, and you need not anticipate a large expenditure on this account. On no account try to go through the course without the advice of one of the local physicians.

If the physician whom you consult considers your case needs a physical examination he may direct you to remain in bed the following morning until he calls round before 9 A.M. to properly examine you.

Before concluding these severely practical directions, let me say a few words on the various **taxes** you will have to pay. The visitors during the season exceed the permanent population, and, considering how royally the place is arranged and maintained for their benefit, it is only fair they should contribute towards municipal expenses.

A local "kurtaxe" of 6 florins (increased to 10 in the case of a nobleman or very wealthy person) is levied on every one staying in Carlsbad longer than eight days, and also a music tax of 3 florins per person. The music tax supports the excellent bands which play whilst the visitors drink the waters in the morning, and also at the various cafés and restaurations during the afternoon and evening. Whilst at Carlsbad the visitor's official generic title is **kurgast** (guest of the cure). A mineral water spring, to which people resort for medicinal purposes, is in Germany and Austria styled a "Bad," or bath, and as a summer resort takes the place of the seaside with us. These places, of which Carlsbad is the chief in Austria, are ruled by the physicians, and they treat brother medicos from all parts of the world really as guests in the kindest manner. Doctors pay no "kurtaxe" and get baths in the Kurhaus free. Excellent **Reading**

Rooms, both for ladies and gentlemen, supplied with the best daily and weekly papers of all Europe and America, are open during the entire season in the Kurhaus. The moderate fee of 2 gulden monthly obtains for the kurgast the *entrée* of these rooms.

Letters can be forwarded **to the poste restante,** Carlsbad, until you have a fixed address.

Sperrgeld.—An ancient custom survives in the Austrian dominions which obliges each person entering a house after 10 p.m. to pay the Hausmeister, or hall-porter, who opens the door, 30 kreutzers. The kurgast will have to pay this if he comes home late.

This custom was originally introduced as a check on the members of secret societies.

CHAPTER II.

AN AVERAGE DAY AT CARLSBAD.

Method of conducting the course there—Diet—Drink—Amusements.

Method of drinking the Waters.—Early on the second morning of your stay the Hausmeister, or porter, of your lodgings calls you. Although it is only about 6 a.m., as you dress you hear the bands playing at the various springs. A very hurried toilet suffices, and without having had even the morning cup of tea or coffee,* fasting, you sally forth to the spring your physician has recommended. It is usual to begin on some of the colder springs, as the Schlossbrunn. The colder the spring is, the greater its aperient effect. As you come along the Schlossberg, a long line of drinkers will be seen in front of the spring, moving on slowly downhill, step by step, as each in turn receives his glass of water. The latest comer must always fall in at the end of the line and wait his turn. On receipt of his glass of water, in his own mug,† from the Bohemian

* This is allowed to patients who are weak or feeble, or who feel they can't do without it.

† Graduated glass mugs, from which to drink the water, can be purchased at the springs. The girls presiding at the springs will retain them there for use, and expect a gratuity for so doing when the Kurgast is leaving at the end of the course.

girls * distributing it, he must fall out of line and drink it slowly. It *must not* be gulped down in one draught. A short walk is taken for twenty minutes, then you return and fall into line, as before, receiving your second glass. Another short stroll for the same length of time is taken, and lastly, a third glass is drunk.

After this a quiet walk for about an hour is indulged in until time for breakfast, about 9 A.M. At least an hour should elapse between drinking the last glass of water and breakfast. This morning parade of every one at the springs is a most interesting sight. Representatives of almost every nation are there. I remember, in one morning, seeing a tall Bengali doctor from Calcutta, two Japs, a few Chinamen, and three Bombay Mahomedans. There are generally many Turks, Egyptians, and kilted Albanians. These, mixed up with huge Croats, Wallachians, and Russians, often in a picturesque corner, give the whole scene more the air of a fancy-dress ball than a page from real life. *Embonpoint*, as charming in its earliest as it is the reverse in its latest stages, can be daily studied in all its varieties. This is the great "Kurort" (place of cure) for it. Jaundiced men and women are met in every street, and are not, poor things, imprisoned at home as they are in Britain. Carlsbad is their Mecca. The beauty and toilettes of many of the Hungarian and Austrian ladies could hardly be

* Bohemian peasant women are great favourites in Vienna as wet-nurses and nursery-maids. These young ladies wear short petticoats reaching only to the knee and high jack-boots. This costume is very comical, but is necessitated by the amount of snow in winter only, and is seldom seen in summer.

surpassed. These ladies are, next to our own country-women, perhaps the most beautiful in the world. Most charming walks are cut along the wooded hills about the town, where the kurgast can wander shaded from the by no means mild rays of an Austrian midsummer sun.

After an hour's stroll a simple **breakfast**, consisting of two soft-boiled eggs, a cup of tea, a few plain rolls or some "zwieback," is taken. A very important item in the "cure" is **that the amount of food taken is strictly limited**, and the kurgast is not allowed to gorge himself.

Over-eating, if persistently indulged in, is as injurious in its consequences as over-drinking. It is, however, a curious fact that those who do habitually over-eat, can very seldom be convinced of the fact, or induced to give it up.

Over-eating and over-drinking overfill and over-distend the stomach. Its condition soon becomes one of permanent dilatation. An ordinary meal now fails to fill it. The appetite remains unappeased, and the patient craves for further food in large quantity.

The residents in hot countries, from taking copious and repeated cold or iced drinks, get similarly dilated stomachs, which, in like manner, lead to excessive appetite. Iced drinks, both in India and America, are specially liable to produce dilatation of the stomach. The cold fluid rather checks absorption, and so remains a long time in the stomach, dragging and distending it. This excessive appetite, instead of being a sign of vigorous health, is often, in India especially, one of disease. Remember, then, to take

only the exact amounts at meals ordered by your physician and to curb the appetite as much as possible.

Serious work, heavy study or attention to business, are forbidden. *Carpe diem*, with restrictions, is the motto of the place. Light reading, conversation, gentle exercise, sight-seeing are the recognized amusements. The charming little bijou, Carlsbad theatre, also closes early to suit the kurgast.

Smoking is strictly forbidden at the actual time of drinking the waters. One pipe or cigar after meals thrice daily is allowed, but all excess must be avoided.

As you progress with the course, you will become aware of the peculiar **effect of the waters** on your memory; names, facts, or recent events can be recalled with difficulty, delay, or, in some cases, not at all. You may also find that your nights become restless, and sleep only visits you capriciously. This will be more especially the case if you have been indulging in any exciting occupations, continuous card-playing for money, heated political arguments, etc. Such methods of passing the time should be avoided. If sufficient sleep is not obtained at night, an afternoon nap, at least a couple of hours after the midday meal, is allowable. All these are transient symptoms of trivial import, and need excite no alarm.

After breakfast the kurgast amuses himself by conversation, correspondence, etc., until about 11 a.m., when he has been ordered by his physician on alternate days to have baths in the mineral waters of the springs. **Baths** of all kinds are obtainable at the Kurhaus, also at the Neubad and at the Kaiserbad, the most luxurious and well-appointed bathing

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establishment in the town. Formerly our English spas were much behind the Continental in bathing conveniences. Now at Buxton, Bath, and many other English springs, the baths are all that could be desired. Great care should be taken to avoid chills after bathing. Residence in the tropics renders the European constitution peculiarly liable to them. A good plan is to adjourn, after the bath, to the Kurhaus Reading Room until 1 p.m., the time for Mittagessen, or midday dinner, arrives.

This **midday meal** between 1 and 2 p.m. usually consists of soup, fish, plain roast or boiled fowl, or joint with certain vegetables, and a light pudding or stewed fruits.

Diet.—The following **articles are rigidly excluded** from the Carlsbad dietary :—

Fresh fruits.
Salads.
Acids, *e.g.* vinegar, lime-juice, tart, or bottled fruits, etc.
Cheese.
Tinned, dried, or smoked fish.
Butter.
Nuts.
Highly seasoned or greasy dishes (such as curries).
Sweets are also to be avoided.
Strong Spanish or Portuguese wines, liqueurs, or raw spirits.

What to drink.—Weak spirits and water, light, dry red wines, of which the Austrian Vöslauer and the Hungarian Carlowitz are the very best, are allowed with the midday and evening meals. Beer is also permitted to many. I would, however, **caution**

Anglo-Indians and residents in the tropics against beer and malt liquors generally. Clinical experience amply shows that beer, porter, and malt liquors seldom agree with patients suffering from the various forms of functional derangements of the liver which affect dwellers in the tropics. Recall your dinner-table experiences in India. How many men have you not heard refuse beer, perhaps apologetically and regretfully remarking that they were no longer able to take it: they had been obliged to give it up years ago. Why? Because they found it so disagreed with them that if they persisted in taking it they got ill. I estimate that about 75 per cent. of beer-consuming Britons are, after a few years' residence in the tropics, forced to abandon it. The remaining 25 per cent. are generally individuals who have the digestion of ostriches; and I have seen such men take strong export stout all through the Red Sea at its hottest. That the British soldier in the tropics should be, without discrimination, allowed to consume a daily quantity of strong beer has always appeared to me a great dietetic error, and one that must produce an enormous amount of inefficiency. No hard-and-fast rule can be laid down about total abstinence or the reverse. It is purely a matter of individual constitution. Some people are injured by alcohol in any form and in the smallest quantities; others can't do without it. The gist of scientific facts bearing on the subject is *that alcohol as an habitual article of diet is unnecessary;* that whilst it, to a certain extent, *stimulates digestion,* it has the grave defect of *interfering with elimination of waste products from our bodies.*

To the gouty, rheumatic, and possessors of weak livers, beer or any malt liquor is a veritable poison, and the sooner these individuals recognize this fact, the better. Champagne, port, liqueurs, and short drinks generally have an equally injurious effect. It is a curious and often observed fact that patients who are upset by beer can, without the slightest ill-effect, take equivalent quantities of claret or whisky and water. There is something in malt liquor which interferes with the functions of the liver in certain constitutions. To be on the safe side avoid the fascinations of Pilsener and Lager. Take Vöslauer instead. **Giesshübler** is an excellent table water much used at Carlsbad. It is a natural product, and comes from a spring at Giesshübl-Puchstein, some miles from Carlsbad. An omnibus plies to it daily, and the trip makes a pleasant outing through most charming scenery.

The afternoon is spent in pleasant rambles along the shaded roads in which this Spa is so rich. Afternoon tea, for those injudicious enough to take such an unnecessary and injurious refection, can be had at any of the cafés scattered along the usual routes. An early return to Carlsbad is desirable to avoid the cold of approaching night.

The **evening meal** (Abendessen) is partaken of about 8 p.m., and usually consists of rostbraten—a kind of stew—fish, boiled eggs or roast fowl. About 10 p.m. nearly every one retires to rest.

I have endeavoured to describe an average day at Carlsbad.

CHAPTER III.

THE BATHS OF CARLSBAD.

Various kinds of baths—Douches, percussion and ascending—Oxygen inhalation.

Mineral Baths.—The simplest form of bath is one composed of the warm mineral water of the Sprudel, or principal spring of Carlsbad. Containing, as it does, a considerable quantity of alkali, its effect on the skin is peculiarly pleasant. All fatty matter and decayed epithelium are dissolved away by it, leaving the skin smooth, soft, and velvety. These are the baths usually prescribed for ordinary Anglo-Indian cases. The cost of a salon bath is 1fl. 50 kr., and as one is to be taken every second day the total expenditure for baths may be calculated as 1fl. 50 kr. × 11 = 16 fl. 50 kr. The temperature of these baths will vary from 90° to 112° F. as the physician directs, and the length of time the patient remains in them from five to thirty minutes.

It is a mistake to suppose that any of the ingredients of the water of a bath are absorbed into the system. The skin is very thick, and is covered with an oily secretion which effectually prevents any absorption from aqueous solutions. If medicinal substances

mixed with oils or fats are rubbed into the skin they are absorbed. The same also occurs if they are dissolved in fluid such as chloroform and ether, capable of dissolving the fatty secretion of the skin. *Baths act beneficially through their powerful effect on the nervous and circulatory system.* **Cold baths** have a tonic and bracing effect on the system. Under their influence waste products and toxins (the poisons produced in the body by disease) are more rapidly eliminated from the body, and more rapid absorption of fresh nutriment takes place. The appetite improves, the muscles gain tone and vigour, and the circulation is strengthened. After a cold bath a reaction occurs; the skin glows, fills with blood, becomes warm and rosy.

Any one in whom this effect is not produced should avoid cold baths.

The good results obtained from treating cases of fevers and other inflammatory illnesses can in the light of the above be understood. These affections prove fatal from the accumulation in the system of the poisons they themselves produce. Bathing the patient in cold or tepid water eliminates these poisons (toxins) in the form of urine and sweat, and at the same time increases the amount of food assimilated. Bathing does all this, and reduces fever more effectually and with less loss of the patient's strength than would be the case with medicines given by the mouth.

A most important relation exists between the skin and the internal organs. Whatever chills the skin, drives the blood from it into the internal organs. It is this effect which prevents dwellers in the tropics taking cold baths. Their enfeebled and atonic organs

cannot stand the sudden influx of blood. It acts like a chill, and gives them internal congestions. Residence in the tropics produces relaxation of the blood-vessels of the internal organs, and the result is that they almost invariably contain too much blood, or are, in other words, in a state of slight chronic congestion. Hot baths, on the other hand, are good for this condition, as they allow the vessels of the skin to distend and become dilated with blood, which leaves the internal organs to come to them.

This temporary relief from congestion gives the internal organs a respite to regain their normal tone and a chance to get well again.

In temperate or cold climates a sedentary life, want of exercise in the open air, and lack of sunshine to improve the quality of the blood, over-eating, unhealthy occupations, and a variety of other causes, produce a somewhat similar congestion of the abdominal organs.

When chronic congestion of any organ exists for a long time, an increase of its fibrous tissue, with a subsequent contraction and atrophy, results.* This shows how mere residence in a tropical climate can gradually and insidiously give rise to incurable organic disease, which, like a thief in the night, steals upon its victim without warning and without symptoms. A course of drinking and bathing at Carlsbad is the best thing for removing these tendencies to the onset of organic disease, and giving our organs a fresh and healthy start again. The French, Italian, and Austrian Governments provide courses of such treatment for their soldiers who have been exposed to malarial influences

* This is a well-known pathological law.

We require something of this kind in India, and in East and Central Africa.

Hot Baths have a soothing and somewhat enervating effect on the system. This latter action can be prevented by a momentary cold affusion at the moment of leaving the hot bath. The combination of the hot bath and cold affusion constitute one of the best varieties of the **Russian bath.** Hot baths, especially **hot salt water** (sool) act powerfully in relieving internal congestions, such as Anglo-Indians so commonly suffer from.

A good plan is to take hot salt water baths daily on ship-board during the voyage home from the tropics.

The best time for a hot bath is before going to bed at night. The reason for this is that then there is less danger of contracting a chill. Another way of avoiding chill is to sponge with a basinful of cold water immediately on leaving the hot bath. This causes a reaction similar to that after a cold bath. Weakness, giddiness, nausea, singing in the ears, or fainting * may be caused by taking too hot a bath or staying in it too long. The remedy is to leave the bath and sponge the head or body with cold water. Ammonia or stimulants may also be resorted to. There is an electric bell in every bath-room in Carlsbad by which an attendant can be at once summoned.

Russian Bath.—A good form of this is a very hot bath with soap and flesh-brush accompaniments, concluded by a sudden douche of cold water. It keeps

* These are symptoms of too little blood going to the brain from weakening and exhaustion of the heart by too long immersion and too high a temperature.

the skin acting, and thus the blood purer. I have seen such a daily bath ward off gout for many years. It is the best kind of bath for Anglo-Indians, as it combines all the advantages of both hot and cold baths. The body gets heated sufficiently to stand the shock of the cold affusion without injury to the internal organs, and a brisk reaction and glow follow at once. There are other forms of Russian hot-air and vapour baths.

Mud or Peat Baths (Moor Bäder) consist of finely powdered peat mixed with heated Carlsbad water. It is brought in on a wheeled truck and placed beside a large bath of clean tepid water, in which to wash off the residual peat on coming out. A feeling of fear, repugnance, and disinclination to get into the black and dirty mass seizes the patient on first seeing the Moor Bad. Once immersed in it, however, the sensation of warmth and comfort are delightful. The entire body and limbs are enveloped in a huge rest-giving and soothing poultice.

Indications.—These mud baths are of the greatest benefit in malarial enlargements of the spleen and liver, in those feminine diseases where inflammation about the womb and ovaries has followed on miscarriage, in cases of chronic peritonitis, typhlitis, or appendicitis, in chronic dysentery, and in those milder forms of abdominal pain due to tender and congested patches on the interior of the intestines which we meet with in malarial cases. Patients remain in these baths for from twenty-five to forty minutes; very great care and the warmest wraps are necessary to avoid chills after them.

Pine Baths (Fichten Bäder) are another very

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delightful form of bath. The soft young shoots of pine trees are boiled down to the consistence of a pulp. This and a little of the fragrant essential oil of the pine are mixed up in a large bath of hot water. These baths render the skin very soft and smooth. They are of great use in chronic muscular rheumatism. A pine bath and peat bath are amongst the things every one going to Carlsbad should make personal trial of.

Steel Baths are prescribed for anæmic cases, but as no iron can be absorbed from them, their use must be considered as rather fanciful. When the iron is associated with a considerable amount of carbonic acid gas in solution, the effect is peculiarly stimulating and very suitable for female cases of anæmia. This effect is mainly due to the carbon dioxide, and not to the iron.

Electric Baths I can personally testify to the efficacy of. Whilst on active service on the Eastern Frontier of India, some sixteen years ago, exposure to malarial emanations and damp fogs whilst sleeping out at night, gave me an attack of rheumatism of seven weeks' duration. Slight recurrent rheumatic attacks kept troubling me until I took hot salt electric baths, and applied electricity vigorously, whilst in them, over the liver. Complete success attended this treatment. The liver must be regarded as the seat of manufacture of rheumatic and gouty poisons. When that organ is stimulated to do its work properly both these affections vanish. They are simply proofs of defective work (imperfect metabolism) on the part of the liver, and in the above case this was due to the action of malaria and chills.

Massage is often advantageously combined with many of the above baths. It is simply a systematic method of rubbing in such a manner as to empty the muscles and tissues of old and stagnant blood and lymph. These fluids are in this way made to join the general systemic flow, and thus compelled to pass through the lungs and liver, where they are purified. It is wonderful what a number of morbid sensations and symptoms can be removed by the simple extrusion of this stagnant blood. The rubbing is conducted in the direction of the return circulation, *i.e. towards the heart.* Massage is rather expensive. Some natives of India do it rather well, as Surgeon-Lieutenant-Colonel Temple-Wright points out in his excellent paper on Carlsbad in the *Indian Medical Gazette* for March and May, 1891. They need, however, to be instructed *not* to rub from the heart towards the extremities, as they are so fond of doing. This method of rubbing would be useless. Whoever can take a good walking tour in the Hills in India or in the Scotch or Swiss Highlands, needs no massage. I have many times seen a pedestrian tour of a month or two do more towards the re-establishment of health than could all the medicines in the extra pharmacopœia. Massage is artificial exercise. It never equals the natural. Patients whilst in the bath should maintain continuous rubbing over the affected parts. Stiffened joints or painful muscles and tendons should be bent, stretched, kneaded, and rubbed. Teplitz sometimes effects most wonderful cures in such cases.

Carbonic Acid Baths have peculiar properties worth mentioning. "A strong feeling of heat in a cooler

temperature of bath"*—all the stimulating characters of the cold bath without any undue lowering of the patient's temperature, vastly increased tissue change and blood formation, with resultant access of health and energy.† The heart's action also is often reduced to the extent of eight or ten beats in a minute. The Sauerbrunn baths of Carlsbad are rich in this gas, as are also the steel baths. Hot air, vapour, douche, Turkish, and all kinds of baths are to be had at Carlsbad.

Necessity for Warm Clothing.—Warm woollen underclothing should be constantly worn. The morning air at the springs is cold, and as the evening meal is taken at a restauration, cold must be guarded against whilst returning to your rooms. Warm wraps should be invariably taken to the Kurhaus to wear for some hours after bathing. Chills are easily caught. Their effects are difficult to get rid of; they delay and interrupt the course of treatment.

Turkish Baths are sometimes most useful, in cold weather, for persons who have lived in the tropics. Residence in a cold climate, in persons with feeble circulation and of sedentary habits, often results in the epidermis becoming very hard, horny, and impermeable to the natural exudations of the body. Turkish baths soften this down, re-establish the action of the skin, and so free the system from a quantity of impurities previously sealed up. Retired Anglo-Indians in the cold English winter often find the greatest benefit from the use of a portable vapour

* Julius Braun's "Curative Effect of Baths and Wells," translated by Dr. Hermann Weber, p. 303.

† "Mineral Waters of Vichy," by Dr. C. E. Cormack, p. 89.

bath in their own houses. The great objection to public Turkish baths is the trouble and risk of going out to them in cold weather.

Amongst the other curative devices employed at Carlsbad may be mentioned the hydraulic methods of applying water to the body, which are known as douches.

Douches are divided into **percussion** and **ascending** douches. The former are stimulating methods of applying water to the surface of the body in the form of a strong stream or jet of water under pressure. This in reality amounts to flagellating the patient with water. Whipping is usually a stimulating process, and these douches, which are most bracing and stimulating, are used to rouse vitality in cases in a low and depressed condition. The patient stands at one side of the douching-room whilst the attendant from a distance of several feet directs the water upon him. The full force of the water would be strong enough to nearly knock over an average man, and it is consequently graduated to suit the patient. Care should be exercised that nervous people, or timid or hysterical cases, are not frightened by too cold or too violent douching. Tropical patients had better avoid the cold douches—they might cause severe congestion of the liver or chill unduly. The tepid douches they would find both pleasant and beneficial (see Appendix).

The **Ascending Douches** consist of water under pressure allowed to flow up the rectum or vagina, or upon a relaxed perinæum or vaginal outlet. Their object is to brace and stimulate the parts. The rectal douches are used mainly for obstinate constipation, mucous colitis, etc., and are most useful

in muscular weakness of the bowel. Vaginal douches of the alhaline Sprudel water are useful in lencorrhœa, amenorrhœa, relaxation of the roof of the pelvis, displacements of the womb or ovaries.

The Britisher does not take kindly to ascending douches. It shocks his insular modesty. We are probably not yet educated up to them, as our Continental brethren are. This prejudice makes the attitude of natives of India towards enemata intelligible. They can seldom be induced to have one under any circumstances. In military hospitals in India, long ago, the way to clear a malingerer out and back to duty was to order him an enema. My own early experience in a Gurkha regiment may be of use to others. The adjutant very kindly warned me not to order the Sepoys enemata, as if insisted on, the attendant who attempted to carry out the order would probably be beaten, or perhaps knifed, and a mutiny in the regiment would follow. This occurred soon after I landed in India, young and inexperienced, and I was most grateful for the hint. Having been transferred to the civil branch of our service, and having done no military duty for the last fifteen years, I cannot say if the prejudice is still so strong as it then was amongst the fighting races of India. In civil hospitals in India the prejudice does not seem so strong.*

Inhalations of oxygen and of carbon dioxide gas are also used at Carlsbad. The former is not, in my opinion, of very great benefit in chronic cases. The latter gas acts as a local anæsthetic mainly.

* Another point the young doctor in India must remember is, never to order a Sikh's head to be shaved. A Sikh's hair is part of his religion, and to cut it or shave it means, to him, excommunication.

CHAPTER IV.

THE ARTIFICIAL CARLSBAD COURSE, AND HOW TO CARRY IT OUT.

Relative costs of natural and artificial courses—Indications—Contra-indications—Tropical cachexia—Methods—Physiological rest—Effects of the course—Appetite increased—Late manifestation of good effects—Precautions during the course—Season for and duration of course—Artificial course in India and the tropics—Diet—Drinks, alcoholic and temperance—The after-cure.

THE cost of the course at Carlsbad is about £40 to £50. This sum includes return railway fares from London or Continental port of arrival from America or India to Carlsbad. It suffices to live as a gentleman, and will permit some quiet amusements and some day excursions in the neighbourhood for those who tire of the monotony or heat of the Carlsbad valley and the daily round of bath life. Many persons, from a variety of reasons, are unable to get to Carlsbad itself, and it is mainly for those unable to do so these directions have been written.

With the aid of the exported Carlsbad water and

natural salts * a course of treatment can be carried out almost anywhere in exact imitation of the course at Carlsbad, and *at a most trifling cost.*

Such a course carried out at any place other than Carlsbad I shall term an **artificial course.** The artificial course should not be undertaken without the advice of a doctor.

Many could benefit from such a course of treatment at their own homes in the country or suburbs, or during their annual holiday to the seaside. The stealthy onset of fatal organic disease could be averted if this treatment were earlier and oftener resorted to, and the necessary lives of breadwinners could be saved for long years of future usefulness to many a rising family. The description of those conditions in our lives which lead to a necessity for the employment of Carlsbad treatment is given in Chapter VIII., and should be studied before embarking on an artificial course.

Perhaps the greatest merit of the treatment is its *power of* establishing a vigorous condition of health, and so *averting illness.* It is in this light I would bring it to notice as a systematic procedure—not as the new plaything of a few mornings, incorrectly taken, with a total disregard of dieting. To the unrested workers of temperate climates it can be confidently recommended. Still more will it benefit those whose lives are passed in the tropics. They have the harder lot. Exiled as they are from home, and often from friends, with the few hospitals in our great tropical Empire fit to properly accommodate Europeans of our class, probably difficult of access, with defective

* Use only *natural* salts—they are the only genuine.

invalid food-supplies and cooking, and with a lack of trained or skilled nursing, the tropics are the saddest portion of the world in which to be ill. India —that "Land of Regrets"—when we are ill, makes us think of the "Never Never Land"—the name Australians have given to the tropical "back blocks" of Queensland.

All undertaking the artificial course must be prepared to devote to it absolutely, two hours of their time, every morning before breakfast, for the space of twenty-one days—otherwise they had better not embark on it.

A widely spread impression prevails that Carlsbad water is unpleasant and nauseous. This, like so many other popular impressions, is erroneous.

Indications.—Before embarking on the course, you should be aware of the conditions and affections for which the treatment is suitable. Unlike a patent medicine, it does not cure everything. *Its sphere is limited to conditions of impurity of the blood, arising from imperfect action on the part of the digestive and blood-purifying organs.* Such conditions are, as a rule, not of an acute or recent nature.

This treatment is used for: dyspepsia of all kinds, except the atonic and inflammatory forms (see Chapter IX.); ulcer of the stomach; catarrh of the stomach; dilatation of the stomach; congestion, inactivity, or sluggishness of the liver; gall-stones, jaundice, and catarrh of the bile-ducts; liver indigestion, or secondary dyspepsia; diabetes; the early stage of biliary cirrhosis; hypertrophic cirrhosis; intestinal catarrh, and those slight forms of chronic dysentery dependent on it, in which there is little

or no ulceration present; chronic diarrhœa; hæmorrhoids (piles); habitual constipation; albuminuria dependent on hepatic or other congestion; the early stages of Bright's disease; renal gravel or small calculi; after operations for stone in the bladder; congestions and enlargements of the womb; after recent pelvic inflammations around the womb; inflammations, congestion, and neuralgia of the ovaries; peritonitic adhesions around a recent appendicitis; gout; rheumatism depending on derangement of the liver; anæmia; abdominal plethora; obesity; some forms of neuralgia (*e.g.* gouty); gouty eczema; scleroderma.

Generally, also, it is indicated for the over-fed, over-worked and under-exercised.

Some curious **apparent paradoxes** will be noticed in this list. For instance, it will hardly be credible that such opposite conditions as diarrhœa and constipation, or as anæmia and abdominal plethora, should be amenable to the same treatment. It is not really these conditions themselves which it is sought to treat by Carlsbad, but the *causes which give rise to them*. All these conditions are only the symptoms, the outward manifestations, of one cause—defective digestion; and this it alone is, which Carlsbad professes to rectify. "This was sometime a paradox, but now the time gives it proof."

For respiratory affections pure and simple it is not used, but for such affections as asthma dependent on indigestion, or hepatic congestion, or gouty bronchitis, or laryngitis, it would be indirectly beneficial by tending to remove or ameliorate the conditions producing them. Dyspnœa dependent on obesity might also in some cases benefit.

For most chronic gouty affections of organs, members, or tissues it is likely, *cæteris paribus*, to prove useful.

Indications for Residents in the Tropics or Hot Countries generally.—Mere residence in the plains of India or in the tropics is in a great many cases quite enough to occasion sufficient inactivity of the digestive and blood-purifying organs to necessitate a course of this treatment. The following symptoms will denote such a state of affairs. All need not necessarily be present, but the simultaneous presence of several of them is strong presumptive evidence: Failure of digestive powers, loss of appetite, sudden and irregular attacks of diarrhœa from trivial errors in feeding or from very slight and almost imperceptible chills, tenderness and sense of weight in the liver or right side, pain or tenderness in the spleen, headache, irritability, lassitude, sleeplessness, loss of power of application and concentration, depression of spirits, sallowness of the complexion, falling out of the hair, rapid diminution or loss of sexual power.

The nervous system, too, may show signs of the stress of hard work in the tropics, in the loss of nerve in riding, shooting, climbing; in control over the voice and emotions; in forgetfulness of names, dates, faces, facts, etc.; in tremors of the hands (not alcoholic). Vacillation, hesitancy, and timidity replace decision both in work and sport. All *work* becomes an effort and distasteful. This condition is a dangerous one for an official or business man in a responsible position in the tropics. He is apt, unconsciously, to do his work along the lines of least

resistance or trouble, and so to neglect the best interests of his employer. It is clearly to employers' interests to see that the health of their employés is kept up to par, and when it has sunk to a low level to send them on leave to Europe or to a hill sanatorium. Only those who have lived in the tropics can understand how rapidly health can deteriorate there. Official overwork is answerable for much illness, from its depressing action on the nervous system. In the Civil Service of the Indian Government overwork is rapidly approaching the breaking strain, and its avoidance will soon become a pressing question for the administration.

For the above combination of symptoms, or rather for a selection from them, without any actual disease, but attended by considerable functional derangement of many organs, I would suggest the name **tropical cachexia.** I shall use this term with this meaning later on for its brevity and convenience. Of tropical affections especially amenable to Carlsbad treatment the most common as well as the most important are: The various forms of chronic congestion of the liver, which are the results of attacks of malarial fever or of residence in a hot climate; enlargements of the liver and spleen; *hypertrophic* cirrhosis of the liver; the aggravated form of chronic gastro-intestinal catarrh known as *tropical,* characterized by the large white tongue, thickly furred—the *tropical tongue;* chronic diarrhœa; the milder and purely catarrhal forms of chronic dysentery, where there is no deep or extensive ulceration present; renal gravel (the result of malaria acting on the liver, and increasing the amount of uric acid excreted); diabetes.

Contra indications.—The treatment by mineral waters in general or by Carlsbad in particular is, generally speaking, only suitable for chronic affections, and it should not be employed for anything of the nature of an acute attack, or during an attack of malarial fever.* An attack of ague during the course should lead to its being discontinued for a day or two, and not resumed in too energetic a form. Large draughts of hot Carlsbad water should not be taken after a chill. They would probably lead to the occurrence of further congestion.

The following conditions render a course of Carlsbad treatment absolutely inadmissible. Should such patients be so ill-advised as to attempt it, the most serious results, amounting in some cases even to death, may ensue.

1. Valvular disease of the heart.

2. Degenerative affections of the blood-vessels (as atheroma).

3. Advanced malarial or fatty degeneration of the heart.

4. Advanced Bright's disease (of the kidneys). The incipient stages of the disease can be treated with safety. This affection is usually accompanied by simultaneous disease of both the heart and arteries—hence the greatest danger exists. On the other hand, the digestive defects which produce this disease are those most easily cured by Carlsbad—*if taken early enough.*

5. Any disease of brain, spinal cord, or nervous

* There are, however, certain forms of low fever met with in the tropics which seem to be due to inactivity of the liver. These promptly recover after a few days of Carlsbad treatment.

system—certain forms of chorea (St. Vitus' dance), and certain forms of neuralgia (gouty, etc.) excepted.

6. Malignant tumours, or malignant disease in any form, *i.e.* cancers or sarcomata.

7. Advanced syphilitic disease. A slight attack, from which the patient has subsequently recovered completely, does not in any way prohibit a course of Carlsbad.

8. Ulcerations of the lower portions of the bowels. Gastric and duodenal ulcerations are, however, most amenable to the treatment.

Generally speaking, Carlsbad is unsuitable for most forms of organic disease.

Having satisfied yourself that none of the above contra-indications obtain in your case, and that it is otherwise necessary, you are now ready to start upon the course.

Methods of conducting the Artificial Course.—1st Method. With the Imported Natural Water.—Procure one dozen bottles of the imported natural Carlsbad water (Sprudel). Pour six ounces by measure of the water into a small beer-tumbler of thin glass; then place it standing in a vessel of hot water until the Carlsbad water inside it warms up to the required temperature. Scratch a mark on the outside of the tumbler so that you may know the exact amount to pour in next time. Drink the six-ounce dose you have thus prepared, the first thing in the morning, fasting. Then go out for a quiet stroll of twenty minutes' duration. Come in again and have another six-ounce dose, exactly the same as before. Again go for another twenty minutes' short stroll, and return for

a third six-ounce dose.* This is usually the last dose for the day, and you now go for an hour's good walk before breakfast. Distinctly understand that *no breakfast must be taken until at least an hour after the last dose has been consumed.*

No business or commissions of any kind must be undertaken during the twenty-minute walks, as they are certain to interfere with punctuality. No pains should be spared to keep the mind quite free from business worries, or anxieties of all kinds, during the course. The object is to wholly rest the mind by diverting its operations into an unaccustomed channel, and transplanting it for the time into new and pleasurable surroundings. From this it will be seen that the artificial course is best conducted away from business surroundings. The patient who reads through a pile of business letters whilst drinking his morning glasses, and continues to be bombarded with business telegrams throughout the day, will derive little real and lasting good from the course.

A more leisurely way of taking the water, but not so good as the method given above, is to go on shaving, dressing, and "tubbing" between the three doses instead of going out for the twenty-minute strolls.

In this way put in as much walking exercise as possible, without unduly fatiguing yourself, every morning before breakfast. The object is to work the Carlsbad water through the system whilst the circulation is quickened by exercise. It

* This and the second dose should be left with an attendant to have ready heated by your return, so that no time is lost in waiting for them to heat up.

will be seen that the leisurely method of taking the water whilst dressing cannot properly effect this object.

This procedure is repeated daily for twenty-one days—the usual duration of the course.

2nd Method. With the Natural Powdery* Carlsbad Salts.—Have a bottle of the salts weighed out into fifty-three grains each at a chemist's. Place one of these in a tall tumbler of very thin glass and capable of holding one pint (twenty ounces). On it pour fifteen ounces (three-quarters of a pint) of boiling water. The glass being thin, it will not crack. The powder dissolves completely, forming a perfectly clear solution.† Allow to cool a little, and add from a syphon about five ounces of soda-water. Stir up the aerated water with the salt solution so as to mix thoroughly. Pour off six ounces of it and drink it and two subsequent doses as in the first method, allowing twenty minutes' interval between each.

These measuring operations can be done without the least trouble by purchasing an earthenware jug, graduated in ounces on the inside, in black lettering: one to measure twenty ounces costs only ninepence at the Army and Navy Stores, Victoria Street, London.

Under no circumstances is the dose to be gulped down in draughts. It must be slowly sipped—two or three minutes are to be spent in drinking it.

* The powdery form of the salts must be used—the crystals will not do. See that you get an original bottle of the salts as it is exported from Carlsbad.

† When the water has not been fully boiled, and contains some lime, the solution may get a little milky on standing. This is not injurious.

A good plan is to get a friend or two to take the course together. This is not alone pleasanter, but the course itself is more accurately carried out. The fellow patients then exercise a mutual supervision and control over each other. Sir E. Buck, K.C.S.I., makes the excellent suggestion that Carlsbad *classes* should be instituted at large Indian hill stations every season.

It is not intended that the entire periods specified above should be spent in continuous walking, or that the *kurgast* (patient) should come in unduly fatigued to breakfast. He should arrive feeling very slightly, but healthily, tired—with that degree of tiredness only which gives a relish for food—and with the skin faintly moist from the exercise. When patients are weak or delicate very quiet strolls, with many pauses to enjoy the view, will suffice. The hour's walk before breakfast should terminate, if possible, about 8.45, so as to give fifteen minutes' rest before breakfast.

The Anglo-Indian or other early riser who is strong should be up and out soon after 6 a.m. when the weather is good; if bad, the morning exercise must still be taken, even in waterproof and shooting-boots if necessary. For the less robust the first dose should never be later than 7.20 a.m., to give time for the hour's stroll before a 9 a.m. breakfast.

For the very delicate, a cup of tea—nothing else—is permitted half an hour before the first glass of water. But whenever possible this is better avoided.

At 9 a.m. punctually you are served with a very plain breakfast of two soft-boiled eggs (in India three may be allowed, as the Indian egg is so small),

three or four pieces of dry toast, and one or two cups of tea. Butter or fats of any kind are not usually allowed. Not being digested in the stomach, but in the lower parts of the alimentary canal, they are apt, by their presence, to embarrass gastric digestion. This would prevent existing defects in gastric digestion being benefited by the cure. Fats are apt, also, to decompose in process of digestion in those whose health is below par, and to become rancid and irritating.

The dry toast used during a course is of that variety known on the Continent as *zwieback* ("twice-baked"), and the nearest English approach to it I know of are the tinned German rusks made by so many English biscuit-makers. It can be effectively imitated by placing pieces of bread on a toast-hanger in the oven of a kitchen range until they become of a uniform yellow or pale brown colour all through their entire thickness, and so brittle they break on slight handling. It can also be made before an open fire in a Dutch oven or in the oven of a Rippingille's oil-stove. The essence of the process of preparation is that the heat should be slow, penetrating to the interior of the bread whilst not charring the outside. If this fact is borne in mind, any native servant can easily be taught to make it in any part of the tropics. In India, pieces of bread laid over the iron fire-gratings of a native kitchen, with red-hot charcoal below them, or in a "hot case," such as is used in every Indian bungalow to keep dishes and plates warm, get very fairly done brown or yellow.

By this process the starch of the bread is converted almost wholly into a new compound called dextrine.

This change, in a somewhat modified form, would have to be carried out by your digestive organs if you ate the bread. By preparing it in this way *outside the body*, the assimilating organs are relieved of half the work they would normally have had in digesting it.

This shows in a simple and intelligible form one method of applying the **great physiological principle of rest to enfeebled digestive organs.** Rest of the circulatory, respiratory, digestive, and mental organs can never be complete. Partial—very partial—rest is all we can give them. When man or horse is tired, the remedy is rest; and the same applies to the various organs of these animals. Without rest, repair and recovery cannot be accomplished. The methods of giving the digestive organs rest are—

1. To give artificially or pre-digested foods.

2. To avoid overloading them with excess of food or drink.

3. To use only foods which are easy of digestion. (See paragraph on Relative Digestibility of Foods at end of this chapter.)

Further Details of the Course.—The three morning doses of the water given as directed should have a slightly aperient effect. If they do not effect this, one or two extra powders of fifty-three grains each (of the Carlsbad salt) must be added to the first morning dose, until the desired effect ensues. The object of securing this aperient action is that it ensures the elimination from the body of the impurities dissolved out, as it were, by the Carlsbad water. It also prevents the copious flow of bile poured out into the intestines under the influence of the action of the water,

being reabsorbed again. These impurities and bile would otherwise, on being absorbed from the intestines, cause headaches, nausea, pimples, blotches, boils, and other troubles.

The colder the water is given, the greater its aperient effect—the hot water has very little aperient action. It is therefore a general rule **to give, during the first week of the course, the water as cool** as possible, so as to ensure an aperient effect. During the **second week** it is taken **warm**, and during the **third week hot.** The hot water has a greater constitutional effect than the cold, dissolving out impurities and removing them from the tissues in the most remote parts of the body. During the first week of the artificial course the water should be drunk at a temperature of about 70° F., *i.e.* much below blood heat. If this does not act sufficiently, then it should be taken quite cold ; and if that does not act, add a powder of the salt to the first dose. During the second week take the water about blood heat, and during the third week take it hot—about 120° F., *i.e.* much above body or blood heat. These temperatures can, with a little practice, be very fairly judged by placing the hand on the outside of the glass containing the water.

Some patients who are plethoric or obese are ordered an extra glass of water at 11 a.m., and again at night on going to bed. This nocturnal glass of water I have seen of the greatest use in cases of tropical catarrh of the stomach, with very thickly furred tongue, in various forms of tropical liver congestion, and in the very mildest forms of chronic dysentery and diarrhœa dependent more on intestinal catarrh than

on any other lesion. All cases of gastric or intestinal catarrh, whether tropical or other, should, in fact, take it. They should also have the evening meal at as early an hour as possible.

The doses of the water ordered by the doctor, and his directions, should be strictly adhered to.

Effects of the Water.—The solution of sodic sulphate, of which the water mainly consists, stimulates the stomach and entire digestive tract to vigorous motion. The liquid, solid, and gaseous contents of the intestines are thus hurried rapidly on, and one or two liquid evacuations ensue, in the majority of cases, soon after breakfast, or about two hours after taking the water. The motions are very rich in dark yellow bile, in some cases almost black and tarry looking, so large is the quantity of old and stagnant bile present. The water is rich in sodic salts, which have a powerfully solvent influence on bile and a cleansing effect on the liver generally. Our grandfathers in medicine crystallized this action most accurately in the aphorism "soda for the liver, potash for the kidneys, and ammonia for the lungs." It is striking how often the teachings of empiricism, tempered by experience, are verified by the exacter science of our own times. An increased flow of gastric juice results. The acid gastric juice is at once neutralized by the alkaline water. This shows the importance of taking the water in the morning fasting. An increased flow of urine is also excited. This is due to the increased quantity of water ingested, to the direct diuretic effect of its chemical ingredients, but still more to the action of the hot water on the heart's action, which is stimulated, and blood-pressure

increased. As the secretion of urine is directly dependent on an increase in blood-pressure, it follows as a natural result.

In some cases the water has no aperient effect whatever. In such cases one or two teaspoonfuls of the natural powdery Carlsbad salt (or one, two, or three of the weighed fifty-three-grain powders) are to be added to the first of the three morning doses as before directed. The temperature of the water should also be reduced, or it should be taken quite cold in order to secure an aperient effect. The late Mr. Ernest Hart considered Carlsbad water an excellent astringent.*

Within the first few days after commencing the course an agreeable sense of lightness, buoyancy, and elation is experienced. Depression disappears, confidence in self and hope in the future reappear. The entire mental prospect clears and brightens. Life seems again worth living. The distressing sense of abdominal distension and heaviness disappears, giving immense relief. The tongue clears, the eyes lose their heavy and yellow look; the whole complexion brightens, and begins to lose its look of care and pallid ill-health. Even that peculiar muddy pallor—"the grey Indian look"—of those who have been long in the tropics clears, and assumes a healthier tint.

Later on the slightly depressant influence of the sodic salts manifests itself in slower and feebler circulation, sense of chilliness, slight lapses of memory, slight giddiness on suddenly rising from a sitting

* *British Medical Journal*, Foreign Correspondence. The date I am unable to trace.

or recumbent position,* singing in the ears, or perhaps slight occasional nausea, and all the usual symptoms of temporary and partial cerebral anæmia. These are only temporary symptoms, and need cause no alarm. In the robust and in those with a vigorous circulation they will be seldom observed.

Native patients in the tropics, and especially in India, should be told about the end of the fifth or sixth day of the slight temporary loss of memory the water is likely to cause, as otherwise they are apt to get most alarmed about it, and to give up the treatment under the impression that it has a malevolent magical influence. All the old beliefs, superstitions, and prejudices of the East, matured by centuries of repetition and acceptance, "die very hard." I query if another century of British rule in India will extinguish even half of them.

Those to whom custom has made alcohol an essential should always be allowed it with meals. Whisky and water, or any good sound claret, or hock diluted with Apollinaris or other good table water, may be given with meals to those whose circulation is feeble, and who suffer from cold hands and feet. Liver and kidney cases are, however, both better without alcohol in any form. Give them warm soup instead.

Carlsbad excites a Keen Hunger.—In some the appetite becomes quite ravenous, and needs to be well kept in check. This result only follows where there has been a good aperient action.

Carlsbad tradition assigns the occurrence of some peculiar symptoms known as *the crisis* to a day near

* All these symptoms are due to a diminished quantity of blood going to the brain.

the middle of the course. This I regard as one of those long-lived popular impressions which are so often wrong—although in my own case, on the afternoon of the ninth day at Carlsbad I fell into a deep sleep lasting four hours. This probably was a purely accidental circumstance. In cases where a crisis does occur, it must be regarded as the result of suggestion or as a pure accident. In putting many hundreds of patients, both European and native, through artificial courses, I have not met with any describing the occurrence of symptoms in any way resembling a so-called crisis.

The **late manifestation of the full beneficial effects** of the course of treatment is remarkable. **It often does not appear for a month or two after the termination of the course.** Its onset is accelerated by a judiciously arranged "after-cure" (see p. 62) in a bracing mountain climate, with a considerable amount of open-air exercise and daily change of scene. Bear this in mind, and if at the end of the third week of the course you do not feel as well as you did at the end of the third day, don't be disappointed or think that the treatment has failed and has done you no good. Almost every one going through a course of Carlsbad treatment has this feeling. The benefit is not immediate. It comes after a month or six weeks as an unusually vigorous condition of health, with improved colour, appetite, digestion, and sleep—the patient feeling better than he has done for years. At Carlsbad I have heard several elderly gentlemen, who came there yearly, agree as to how much the course steadied and improved their shooting, and enabled them to take

more exercise than they ever dreamt they could again. Such results are most likely to be attained when the patient takes what is known as a **nachkur** or "after-cure." This consists of either a short course of the waters of Homburg or other saline springs, or of a walking tour in the Swiss or Scotch Highlands. Common salt is the great vitalizer of the animal system. It imparts tone, vigour, energy, and increases vitality generally. Hence the use of springs, like Homburg, containing it. There are, of course, cases with which Carlsbad fails, but a great many of these are individuals who, in spite of the directions of their physician, eat, drink, and do whatever they like—who pooh-pooh the whole system of dietary and restrictions laid down on sound scientific principles as nonsense. Verily, they have their reward.

Precautions to be observed during the Course.—Carlsbad is a powerful remedy. If not used rightly it can effect great mischief. If the articles of diet forbidden on p. 17 are indulged in, they may excite diarrhœa or a severe attack of inflammation of the stomach or bowels. Chills may cause a similar result, and should be carefully guarded against by suitable woollen underclothing and avoiding over-heating, over-exertion; prolonged hill-climbing or exhausting exercise of any kind should be carefully avoided during the course. Even during the "after-cure" it should be taken very gradually, and only after the patient has got "hard" and in good training for it. A man out of health needing Carlsbad treatment can very easily strain the valves of his heart or dilate its cavities. This may result in permanent organic disease. Professional or business men leading

sedentary lives who rush off to Switzerland for a very brief holiday whilst perfectly "soft" and out of training, and begin in this state to do mountain climbing or other heavy exercise, injure themselves in the same way. I have seen some very sad cases of heart disease caused in this way, and what doctors know as the *athlete's heart* is becoming lamentably frequent. Those who are soft and in bad condition from ill health or a sedentary life should take exercise quietly, and begin with three or four miles daily for four or five days, and then gradually increase it by a mile a day. It is not desirable that patients doing the course should take more than eight, ten, or twelve miles' walking exercise daily. Twelve miles ought to suffice for the most vigorous, even. If taken in very small instalments of a mile or two at a time, with long rests between, these amounts might, with safety, be slightly exceeded by the young and vigorous. During the course, dining and lunching out are best avoided. They are almost certain to lead to a departure from the prescribed diet. Late hours, crowded assemblies where the air is impure, and any excessive use either of tobacco or alcohol are also forbidden. The mode of life at Carlsbad itself, as described in Chapters I. and II., should be conformed to as nearly as possible.

An idea prevails that the Carlsbad treatment is *most* depressing and reducing. This impression is a wrong one. The course can be made as strong or as mild as desired by increasing or diminishing the amount of the water or salt taken. In every case it must be suited to the physique and requirements of the patient, and this is where the great value of

previous experience of the treatment, and of how patients react to it, is so valuable on the part of the physician controlling the course. It is quite true that you cannot drink salines and alkalies daily for three weeks without a *slight* amount of depression resulting. But the three weeks' course does not depress to one quarter the extent that three weeks' close confinement at business or professional life would, nor one-twentieth as much as three weeks of hot weather in the tropics would.

Hear what that famous authority, Dr. Julius Braun, in his work on "Balneotherapeutics," says regarding the "Furcht von Carlsbad" (the "dread of Carlsbad"), p. 375:—

"I must add a few words regarding the popular error that a course of Carlsbad is always a 'violent measure.' It might, on the contrary, be maintained that where such a course is judiciously planned and well managed, it is the *mildest* measure which can be adopted amongst the different *effective* plans of treatment which can be taken into consideration. The pretty general belief that purging and lowering and starving are required is quite erroneous: it is even almost always a serious mistake to push the waters to produce diarrhœa; but a restricted though nourishing diet, moderate but not fatiguing exercise, mental quietude and rest after the termination of the course are essential. It is not to be wondered at if a course of Carlsbad proves injurious under the following circumstances, which constantly occur with numerous variations. A man works hard up to the last moment before leaving London; ill as he is, to save time, he travels, in the heat of summer, in two or three days the long distance to Carlsbad; in spite of his fatigued state, he begins his course at once, pushes it on, drinks often one or two glasses more than the doctor tells him, 'because there is not sufficient effect,' and because he must make the most of his time; he then hastens back as fast as he came, for 'his partner leaves for his holiday,' and on arriving in town the 'renewed

man' wants to do the work of two or three, but finds it very difficult, and 'Carlsbad was a mistake.'"

The Carlsbad course, then, is seen to be *the mildest measure by which the patient can regain his health.*

Further, I would point out that it is the tendency of the age to "rush" things through against time, and that this way of doing a Carlsbad course is practically useless. Anglo-Indians on short leave had better bear this in mind also. If time will not permit of the three weeks' course being properly and leisurely carried out, then do a fourteen days' course properly. In every case, if possible, the *after-cure* should be carried out. It enhances the efficacy of the course fourfold.

Caution.—If the course is taken in too strong doses or for too long a period it is likely to produce **atony of the stomach,** or atonic dyspepsia. Once this condition is so induced it is extremely difficult to cure. A saline mineral water well aerated with carbon dioxide is one of the best remedies for it. It is in order to prevent any tendency to the occurrence of this complication that it is recommended to add soda water from a syphon or bottle to the artificial water during its preparation.

Experience has taught me that the **best way to regulate the course in India and in the tropics generally,** is to start the patient on it for ten days, discontinue it for from four days to a week, and then resume for eleven days more. The dietary should be strictly maintained in the interim. In this way the risk of producing atony is avoided. The difference between the Indian and European climates, and still more the state of health of tropical residents, have

shown me that this slight difference in the method of carrying out the course in the tropics, from that employed in more temperate climates, is a necessary precaution.

Season for, and duration of the Course.—Carlsbad succeeds best at a time of year when the skin acts well. It can, however, be taken even in the depth of winter. At Carlsbad there are long covered promenades warmed and well-lighted for the accommodation of those whom necessity drives there in mid-winter, when the town is usually under snow.

The patient, unable to obtain or to take leave of absence from his work, can even carry out the course at his own home in the city or suburbs, and during it he can daily go to his office.

Although a considerable amount of benefit can be derived from a course carefully conducted under these conditions, yet the maximum good effect cannot be obtained. The proper place for the course is the country, not the town; the proper time, summer, or a time of year when the weather is warm. A complete holiday should be taken whenever possible.

Those wishing to do an artificial course in England during the winter, and who, at the same time, need rest, change, and warmth, would find these in a mild south-coast watering-place. Of these the warmest winter climate in England is undoubtedly Falmouth. There, even in January and February, there are nearly always two or three days in every week which would pass anywhere else in Britain for summer days. March has 141 hours of sunshine. The chill, biting cold of the grey north is absent, and in the mild breath of the Gulf Stream the skin acts, and all the

functions of life are carried on with a lesser expenditure of vital force. The entire south of Cornwall shares more or less in these climatic advantages. To those who have lived abroad in summer lands, Britain is, in winter, a very dismal and depressing climate, brightened only for the returned tropical exile, by the affection and presence of relatives or friends.

In India the course should not be taken during the height of the hot season in the plains, as it is then apt to prove too relaxing, and there is some risk of atony of the stomach resulting. The cold weather is a favourable time, but the fever season at the beginning of it had better be avoided, as the course then often apparently leads to slight attacks of fever. In the Punjab, February is a good month for it. In the hills it can be taken all through the hot season, but in some cases it would be advisable not to take it during the more relaxing months of the rainy season, or too soon after coming up from the hot weather in the plains. Even in the plains, in the hot weather, it can be taken for from three or four to seven days for attacks of liver, dyspepsia, etc. It is often useful in the hot weather in checking an attack of boils. A few days' administration at the commencement of the attack—not after it is fully established—often suffices. During the exhibition of the Carlsbad, in these cases, good generous Beaune, Carlowitz, or other good red wine, without too much sugar, must be given, also a liberal dietary of the best plain food, and plenty of stewed fruit, cooked in the special manner given on p. 68. Early morning parades or early morning duties in any climate will prevent the course being taken.

Civil officials in India who cannot obtain leave, might make the course coincide with a tour of district work. All who can get leave should, however, do so, as without change of scene and air, and rest from work, full benefit cannot be derived from it. Tent life in the hills, or in Kashmir beyond the limits of that baleful, liver-producing monsoon weather, in spring or autumn near a good water-supply, with some good Mahseer fishing in the vicinity, is my idea of the best time and place. But, *chacun à son goût*, a hill station hotel or club might suit the tastes of many. If the latter, refer again to the advice I have already given on p. 49 about not lunching or dining out, not going to dances, etc., and imitate as far as possible the conditions of the real course at Carlsbad as given in Chapter II. Go to bed early and rise early. Limit the amount of food taken, and smoke only one cigar, one pipe, or one or two cigarettes after meals—none at any other time.

If tent life in Kashmir is selected by Anglo-Indians, a valley sheltered from the cold winds rushing down from the snows should be sought for to camp in. The camp can be kept there all the time, or shifted by short and easy marches once or twice a week. There is no objection to doing short marches daily all through the course if they are ridden or do not exceed six or eight miles. This should be considered the limit. No fatiguing marches, steep climbs in pursuit of game, or violent exercise are allowable. They might lead to straining of the valves of the heart or to dilatation, as already pointed out. Fishing, photography, sketching, painting, on such a tour would be the most suitable forms of amusement. If

you fear not having sufficient resources in yourself to provide against *ennui*, then by all means take a companion.

The **duration of the course** varies from three weeks to six weeks, or longer in interrupted cases in which the course has to be stopped and resumed perhaps several times. Cases of chronic intestinal and gastric catarrhs, obesity, jaundice, and gout, necessitate longer periods of treatment than the usual three weeks' course.

Diet.—This is as important an element in the treatment as the water itself. The following articles are **rigidly excluded** from the Carlsbad dietary :—

Fresh fruit, uncooked.
Salads.
Acids, *e.g.* vinegar, lime-juice, tart, or bottled fruits, etc.
Cheese.
Tinned, dried, or smoked fish.
Butter.
Nuts.
Sweets.
All spices and condiments, such as acid sauces, mustard, pepper, chutney, pickles.
Highly seasoned and greasy dishes, such as curry.
Strong Spanish and Portuguese wines, liqueurs, and raw spirits.

Breakfast, at 9 a.m., consists of two soft-boiled eggs (three in India), three or four pieces of zwieback, or German rusks (tinned English or American), without any butter, and one or two cups of tea. This meal is practically the same daily and for almost all patients

except diabetics, who have a special kind of bread (gluten and almond).

Luncheon.—About 1 p.m. the keen appetite induced by the course becomes imperative, and a simple but substantial meal is allowed. It consists of soup, fish (boiled), plain roast or boiled joint or fowl, and stewed fruit. To those who prefer it, a plain grilled chop or steak, or a plain omelet may be allowed instead of the fish and joint. The fruit should be stewed in the special manner described at p. 68. Dry toast, rusks or zwieback, not bread, should be eaten with breakfast and dinner. Recooked meats are to be avoided, but good cold beef, mutton, or fowl are allowable. Hot dishes are, however, on the whole, preferable. They do not run the same risk of bacterial contamination, and are placed on the table practically sterilized by recent cooking.

By about 5 p.m. hunger will have again so mastered you that there will be little use in my advising you to refrain from afternoon tea. Let it be as light as possible. Those unable to take tea might try a light cocoa containing a minimum of fat, and for breakfast the old-fashioned shell cocoa might be boiled.

Dinner, about 7 p.m., should consist of soup, fish, joint, game, and either stewed fruit, or milk, or custard-pudding. For dessert at both dinner and luncheon one or two good mild dried French plums. Don't allow inadvertence to lead you into taking *hors d'œuvres*, cheese, pastry, jams, or any of the other forbidden articles. For vegetables at dinner and luncheon, green peas, carrots, French beans are allowed. Avoid the watery varieties of vegetables, like turnips,

vegetable marrow, and if possible potatoes. They are unsuitable, and cause flatulence.

For the sake of completeness, I may here repeat that only one cigar or pipe, or one or two cigarettes are allowed after each meal—none at any other time.

It will be seen that the above is a liberal allowance of food, and that it in no way merits the name of a starvation diet.

Only *small* helpings of each course are admissible.

Restricted Diet necessary.—To observe the precautions in diet laid down above is at Carlsbad itself easy. There you find every one following a certain routine course; you insensibly drop into the same course without effort. The hotels and restaurants aid you by preparing and serving only the special kinds of food which are most suitable. The forbidden articles are not allowed on the tables. The hotel-keeper who does so, soon has his licence cancelled.

Away from Carlsbad the case is different. It requires a very considerable amount of resolution, self-denial, quiet determination and watchfulness to control your tastes and appetites in such a manner as to thoroughly benefit, to the full, by the course. To be sporadically brave, generous, or disinterested is easy. It is impulse—"the perfume and suppliance of a moment." To conquer and resist acquired tastes, to break down habit and custom, to control temper or even the faintest displays of irritation, to check the angry reply rising to the lips, in everyday domestic and public life, require a far higher heroism and devotion. If you wish to succeed with the Carlsbad course, you must be prepared *to mortify the flesh*, rule your tastes, appetites, and habits, and in ruling

yourself feel "greater than he that taketh a city." The Carlsbad doctors strictly interdict all excesses "in Venere aut Baccho."

The Carlsbad dietary, though slightly limited, is still highly nutritious, and more than enough for the needs of the body. Let me again impress upon you that the course without the limited dietary will effect but little good, and if you cannot make up your mind to submit to these limitations you had better not embark upon it.

This limitation is not alone qualitative, but quantitative. **All over-eating must be religiously avoided.** It nullifies the good effects of the course.

Anglo-Indians will find some skeleton *menus* in Chapter IX., p. 197, for various meals. They merely profess to suggest some of the very simplest dishes suitable for patients on the course. They would serve as a guide for a native cook, who might copy them out in the vernacular and give them daily until he comes to the last; then begin again, *da capo*, as on shipboard.

Relative Digestibility of Foods.—Fish, fowl, and game are more easily digested than beef or mutton. Of the latter two, beef is the more difficult of digestion. Veal and pork are extremely indigestible. Liver and sweetbread done on a gridiron *—not fried in grease—are highly recommended. Brains are easy of digestion, good for cases of nerve exhaustion and overwork, but are not very nutritious. Kidneys, except when very fresh from well-fed and healthy animals, are to be avoided. Fatty or greasy dishes,

* Friedlieb, Dr., "On Homburg von der Höhe as a Watering-place," pp. 82, 83.

such as *pâté de foie gras*, curries, marrow, sausages, suet dumplings, plum pudding, ought to be avoided by Anglo-Indians or those who have lived for any time in the tropics. The digestion and absorption of fats especially embarrass the liver, give rise to the condition known as biliousness, and lead to bile entering the stomach, when bilious vomiting often supervenes.

Fothergill * states that the flesh of crustaceans is particularly easy of digestion, and highly recommends fresh lobster salad. Friedlieb † does not agree with him on this point, and forbids crustaceans, especially to any one going through a course of treatment by mineral waters.

The danger in eating the flesh of crustaceans lies in the readiness with which it decomposes and the especially poisonous nature of the decomposition products. If quite fresh it ought not to be indigestible. The entire question is one of individual peculiarity; some cannot tolerate shell-fish under any circumstances. Be guided by your gastronomic capabilities (if you know them), but when in any doubt, refrain.

Fothergill wrote his charming book on the "Physiological Factor in Diagnosis" to prove that his own symptoms were not mortal, and then finally died of them.

Drink.—For general use a good sound claret with Apollinaris or other good mineral water is, perhaps, the best. A very acid claret must be carefully avoided. Carlowitz is nearly always sound and good.

* "Gout," p. 186.

† "On Homburg von der Höhe as a Watering-place," pp. 82, 83.

Weak whisky and water may be substituted for claret and water. Light beer suits many, but it should be forbidden to the gouty, liverish, and calculous, *absolutely*. The simpler the alcoholic drinks indulged in the better. All sparkling wines are to be avoided, except, perhaps, a very good hock. The strong Spanish or Portuguese wines are also prohibited, and so are liqueurs and raw spirits.

Abstainers and those who have a constitutional intolerance of alcohol suffer from the great want of a good temperance drink. Abstainers from conviction or from medical reasons are a large and rapidly increasing section of the community, and it is to be hoped, in their interest, that before long some good beverage will be discovered to suit them.

The so-styled non-alcoholic beers now sold, consisting mainly of an infusion of hops, I have often seen upset the digestion and liver, and produce a deposit of urates in the urine of the digestively weakly, to the same extent as heavy English beer.

The unfermented wines made professedly from the juice of the grape, Pasteurized and bottled, ought to be good.

Both these classes of beverages labour under the defect that they are likely to be so variable in quality. Three bottles out of a dozen may perhaps be bad, and the remainder excellent. This is due to defective sterilization of the bottles, and to the lack of the preservative qualities of alcohol. The salicylic acid these drinks often contain is not an advantage for continuous use. At Vichy, in 1897, I saw the excellent system of steam-sterilization of the bottles

in which the water is exported, most carefully carried out.

Apollinaris, or other good table water, or good spring water, are, after all, the best temperance drinks.

Soups are good stimulants, but nothing more. As a rule, they contain practically little or no nourishment. For gouty and renal cases they are rather injurious, as they contain such a large amount of urea. Jelly labours under the same defect.

It must be remembered that alcohol acts purely as a whip to our flagging energies, and that it contains no nourishment whatever.

Ammonia, digitalis, hot tea, hot soup, and hot drinks generally, can replace alcohol where it is, for other reasons, contra-indicated.

Those who wish to reduce excessive weight should take no fluid at all, not even soup, with their meals. They can have a drink an hour before or three hours after meals. This plan also ensures a much better mastication of the food. Defective mastication or infection of the food from decaying teeth with germs of decomposition, are frequent causes of mal-nutrition and anæmia.

Men very often drink too much with their meals. This dilutes the gastric juice unduly, and so weakens its digestive power.

Women, on the other hand, often drink too little. Every adult should have at least three pints of fluid daily. Many women suffer from chronic constipation and consequent anæmia from taking too little fluid.

Iced drinks with meals chill the stomach and liver whilst these organs are flushed with digestion.

Intractable gastric catarrh generally results from the continued use of iced drinks with meals.

It is well to observe the rule that *tea or coffee should not be taken with any kind of meat or fowl.* This rule Anglo-Saxons generally seem to regard as one only made to be broken. The Australians, however, appear to disregard it most. They pay for that disregard, a heavy toll of dyspepsia, Bright's disease, gravel, and stone in the kidney.

Tea and coffee retard digestion very greatly, and are in consequence unsuitable for most dyspeptics.

Some authorities think that if any meat must be taken with a tea or coffee meal, that it should be a salted meat. Of the suitability of this I am more than doubtful. Corned, salted, and spiced meats mean to dyspeptics almost certain trouble.

The After-cure (Nachkur.—This, on the Continent, is usually conducted by sending the patient to Homburg, Wiesbaden, or some other saline spring for a short course of the waters. Salt is the great tonic and vitalizer of the system amongst the ingredients of mineral springs, and pure saline springs never depress and lower. Patients even gain weight whilst going through a course of pure salines—even when these act aperiently.

Dr. Kraus of Carlsbad says that indifferent thermal springs, *i.e.* containing practically no medicinal salts, such as Wildbad, Gastein, Teplitz, are as efficacious as saline springs in a large number of cases.

Instead of further courses of water-drinking, most people prefer to do the Nachkur in the form of a three weeks' walking tour in bracing mountain or moorland air wherever it is nearest and most easily obtainable.

The Swiss Highlands—the Bernese Oberland—is the best place to go, though many prefer the Scotch Highlands. The former is drier and cheaper in the season, though I question if anything ever gives the same bracing qualities to mountain air as Scotch heather. Bracing lowland air such as is found along the east coast of England would also answer.

Anglo-Indians could take their Nachkur in Kashmir beyond the enervating influence of the monsoon or seasonal tropical rains, or wait until the rains are over, when in late September, October, and November the Indian hill climate is magnificently bracing. The Hindustan Tibet road from Simla is also a pleasant trip. There are bungalows all along the road at every stage, and most of the road lies above the 6000 feet level, and often goes over 9000, so that it is cool even in the hottest seasons.

An essential of all after-cures is the maintenance of the Carlsbad dietary for a period of three weeks after the completion of the course, especial attention being given to the avoidance of acids, fresh fruits, cheese, sauces, spices, and salads. (*See also p.* 48.)

CHAPTER V.

ON THE INCOMPATIBILITY OF ACIDS WITH THE CARLSBAD TREATMENT.

Opinions of Julius Braun—Alkalies mostly absorbed as such—Acids especially injure cases of catarrhal dyspepsia—Fothergill's method of giving stewed fruits to the gouty, rheumatic, and dyspeptic.

JULIUS BRAUN scoffs at the *prohibition of vegetable acids* and butter during a course of alkaline waters. He expresses himself as follows:—

"The theory on which it rests is as crude as it is false, and is opposed not merely to all physiological facts, but even to the most general experience, according to which vegetable acids, *unless special contra-indications exist*, in nowise interfere with the effect of alkaline waters. The carbonate of soda meets with acids in the gastric juices and in the small intestines which are far stronger than carbonic acid (lactic acid, acetic acid, etc.), and which at once decompose the carbonate of soda and transform it into other salts; nevertheless, we find it again in the blood and urine as carbonate, just as we meet with it in the ashes of the blood as the result of combustion. The alkaline salts of vegetable acids are, however, found just as much as carbonates in the blood and urine, as the alkaline carbonates, if they are taken in abundance,* because they undergo the same oxidation in the blood."

The salts of vegetable acids are certainly converted

* "Curative Effects of Baths and Waters," p. 29.

into carbonates in the blood and excreted as such in the urine. But is the same true with regard to the free vegetable acids themselves? When free vegetable acids are introduced into the stomach they irritate it. After being absorbed they most probably unite with the alkali of the blood and form salts, which are then changed into carbonates and excreted in the usual way. *This change is carried out at the expense and sacrifice of the alkalinity of the blood. This is a most dangerous thing to tamper* with, and in certain constitutions—the gouty and rheumatic—is almost certain to be followed by trouble. Clinically we find that the acidity of the urine is increased by vegetable acids; and although this acidity is due to acid phosphates, I maintain that it can only occur at the expense of the alkalinity of the blood.

Dr. Arthur Luff's* book on "Gout," and the account of his recent researches on the chemical reactions of the salts and acids concerned in the production of the disease as well as of those used for its cure, open up pregnant new ideas on the subject. His results upset many of the ideas formerly accepted by the profession, and are opposed to some of the statements made above. His ability and skill as an investigator are unquestioned, but it would be premature on my part to substitute his views for those now held by the profession, until they have been confirmed by other observers and accepted by the whole medical world. This is the invariable and cautious custom of our profession.

That *alkaline waters* are *not absorbed as alkalies*,

* "Gout: its Pathology and Treatment," by Arthur P. Luff, M. D. Cassell & Co., 1898.

but as neutral salts after being acted upon by the acid contents of the stomach, I also cannot believe to be universally the case in tropical patients. In the tropics the secretion of acid in the gastric juice falls to a minimum, more especially in malarial cases. Often, both in hospital and private practice, I have seen such patients vomit milk which they had taken over an hour previously. It came up perfectly uncurdled,* showing the complete absence of acid from their stomachs. In such cases the alkaline water *must* be absorbed purely in the condition of free alkali.

Alkalies mostly absorbed as such.—Even in non-tropical cases I cannot believe that the alkalies of alkaline waters are wholly converted into neutral salts. It is the common and incontrovertible result of clinical experience that long-continued courses of alkalies thin, weaken, and reduce patients.† It is equally acknowledged that courses of salt waters stimulate and improve patients, and that they do not lose weight under such treatment.‡ The acid of the gastric juice is hydrochloric acid—lactic acid only appearing, according to Foster and Waller, as a secondary product of decomposition or fermentation. The sodic carbonate of Carlsbad water would be thus converted mainly into sodium chloride, and a small portion, possibly, into sodium lactate, and absorbed as such. But we have already seen that courses of

* All doctors are familiar with the remark of the anxious mother who tells you on arrival, "Baby's stomach has been so sick; he brought up all his milk quite sour and curdled." This is how it ought to come up. If it reappeared not sour and uncurdled it would then be a symptom of something seriously wrong.

† J. Braun, "Curative Effects of Baths and Waters," p. 323.

‡ Ibid., p. 387.

mineral waters containing sodic chloride do not diminish body-weight and reduce patients, whilst alkalies do.* If Julius Braun's view is right, then no patient should ever be reduced or in any way lowered by alkaline treatment! It consequently appears plain to me that the greater portion of the alkali in Carlsbad water is absorbed as such, and that only small quantities are neutralized and converted into salts by the digestive acids.

Against this opinion it may be urged that the total secretion of gastric juice has been estimated to amount to seven litres per diem, and that the 0·2 per cent. of hydrochloric acid contained in this will more than neutralize all the alkali in the daily dose of Carlsbad. I reply that (1) the fasting stomach seldom contains more than a few ounces of gastric juice; (2) that although the ingestion of alkalies produces a reflex flow † of acid gastric juice, yet Heidenhain has shown that the time for a reflex gastric secretion to occur is from fifteen to thirty minutes, and that before it could take place a dose of hot alkaline water would be absorbed beyond the reach of neutralization.

As the result, then, of clinical experience in the tropics and of physiological facts, I cannot agree with Julius Braun's opinion that vegetable acids are admissible during a course of alkaline waters. My reasons may be concisely summed up thus:—

1. Free vegetable acids irritate the stomach.

2. They tend to diminish the alkalinity of the blood, and render the urine more acid. Possibly they may have the same effect on the blood.

* See pp. 49, 50.

† Ringer's theory.

3. I have often seen them in the tropics start rheumatic pains in muscles or joints, or precipitate attacks of acute rheumatism or gout in those so predisposed.

4. **They are highly injurious to the condition of catarrhal dyspepsia,** so common both in temperate climates and in the tropics that very few are free from it. Any one in tropical practice soon finds out that very few of his patients can tolerate either acids or iron.* Both these remedies are contra-indicated in this form of dyspepsia.

Special Method of stewing Fruit.—It must not be inferred from these remarks that fruits and vegetable acids are to be wholly excluded from the dietary of those taking alkaline (Carlsbad, Vichy, Neuenahr, etc.) waters. Far from it—they are highly recommended. Dr. Luff, in his recent work on Gout, states that it is the *presence in the blood of the organic salts of fresh fruits and vegetables which are mainly instrumental in preventing the occurrence of attacks of gout.* But they should be freed from their excessive acidity by being stewed with bicarbonate of potash or soda in the proportion of 60 grains to one pound of fruit, as recommended by Fothergill † for the consumption of gouty patients. The cook should taste the fruit whilst stewing. If a soapy taste is perceived, the alkali is in excess, and more fruit must be added. Certain fruits (*e.g.* gooseberries, plums,

* Colonel Ross, I.M.S., late Civil Surgeon, Rawal Pindi, whose acquirements and reputation as a physician are so widely known and appreciated, informed me that he had almost completely given up prescribing iron on this account.

† "Gout in its Protean Aspects," p. 207.

currants, etc.) contain a great excess of acid, and may need more than the above quantity of potash. By preparing fruit in this way the vegetable acids enter the blood in the form of salts, and no attack is made on the alkalinity of that fluid. A lesser quantity of sugar is also required. A most fatal mistake dyspeptics make, is endeavouring to mask the acidity of dishes by an excessive addition of sugar.* These salts of vegetable acids are highly essential to proper nutrition, and it would be a serious dietetic mistake to interdict fruits **in toto**. Fresh fruits must, however, always be taken stewed with potash. Most dried fruits, such as figs, prunes, apricots, and dates, contain so little acid that no alkaline treatment is necessary. As for the acidity of wines, in any **sound** wine it is generally so small as to be of little consequence. The acidity of **good** claret varies from 2 to 4 grains of tartaric acid per ounce only, and if it is mixed with Gieshübler water, as is usually done at Carlsbad, any slight excess of acid will be neutralized. But this is by no means essential, and it may be taken neat.

As to the prohibition of butter and fats, these, if taken, would interfere with or embarrass the functions of the liver. Many livers are fattily infiltrated, and to abstain from fatty foods for six weeks gives them time for recovery. Fats also interfere with gastric

* The "sugar crave," like the "drink crave," is in many cases a most marked symptom of perverted or depraved appetite, and is often found in obscure digestive or assimilative disorders. These patients cannot, as a rule, be broken of the excessive consumption of sugar. They often end with chronic rheumatism, heart, liver, or kidney disease. They often beget degenerate children who grow very fat or become diabetic or osteo-arthritic.

digestion to a very material extent. Taken too liberally they are especially liable to cause biliousness and excite nausea and vomiting. In lesser quantities they may produce heaviness, stupidity, or headache.

CHAPTER VI.

CHEMICAL CONSTITUTION OF THE CARLSBAD WATER AND SALT—THERAPEUTIC ACTIONS OF THESE CONSTITUENTS — GENERAL ACTION OF THE WATER.

THE waters of the various Carlsbad springs have the same composition as far as solid ingredients are concerned. The only differences are in temperature and in the amount of free carbonic acid gas in solution. The cooler springs contain more gas.

The **Sprudel** is the principal spring, and its waters are bottled and exported in the greatest quantity. Its temperature is also the highest, being 162° F. The bottled water is clear, limpid, alkaline in reaction, of a specific gravity of 1·0053 * at a temperature of 18° C. A litre of it contains about 5·85 grammes of soluble saline ingredients. One English pint thus contains about 53 grains of salt. In addition, every pint has dissolved in it 12 to 20 cubic inches of natural carbonic acid gas.†

When the Sprudel water is concentrated by evaporation, most of its solid constituents are obtained

* Krause, Dr. J., "Carlsbad: Its Thermal Springs and Baths." London, 1887.

† *Indian Medical Gazette*, March, 1891, p. 72: "Carlsbad Treatment for Anglo-Indians," by Surgn.-Lt.-Col. Temple-Wright, M.D.

as a white crystalline solid which has the following composition: *—

Sulphate of sodium	...	...	...	37·695
Carbonate of sodium	...	...	...	5·997
Chloride of sodium	...	...	...	0·397
Traces of other salts	...	...	...	0·391
Water of crystallization	...	...	...	55·520
			Total	100·000

These **Sprudel salt crystals** are unsuitable for use in the tropics. Owing to the large amount of water of crystallization they contain, they readily deliquesce in warm climates, and in their liquid form are inconvenient and unmanageable. Their taste is also disagreeable; the quantity of water of crystallization taken up by the sulphate and carbonate of sodium is large. Each molecule of both these salts takes up ten molecules of water of crystallization, as may be seen by their formulæ, $Na_2SO_4,10H_2O$ and $Na_2CO_3,10H_2O$. Professor Ludwig, of Vienna, recommended eliminating this excessive water by strongly heating the crystals and supercarbonating the carbonate by exposing it to the action of currents of carbon dioxide gas. It thus becomes converted into the *bi*-carbonate, a less hydrated salt, and not nearly so prone to absorb water (hygroscopic). The compound † so produced is very superior to the other

* Ludwig und Mauthner, "Chemische Untersuchung der Karlsbade Thermen," p. 12. Wien, 1886.

† I have had bottles of it all through the very dry Punjab hot season. It kept solid at temperatures of over 100° F. In the very damp weather of the rains it only exhibited an incipient tendency to grow moist. I have not heard how it behaves in the extreme *damp* heat of lower India.

preparation. It keeps solid in the hottest climate, and is more palatable. It has the following composition: *—

THE PULVERIZED OR POWDERY CARLSBAD SALT (PULVERFÖRMIG).

Sodic sulphate	43·25
Sodic bicarbonate	36·29
Sodic chloride	16·81
Potassic sulphate	3·06
Lithium bicarbonate	0·39
Traces of others	0·20
Total	100·00

An artificial water made with this salt merely differs from the natural water in having its carbon dioxide gas in a state of combination, whilst in the natural water it is present in the free state. This slight defect can be remedied by adding a little soda-water to the water in which you dissolve the salt.

The above analyses show that the main constituents of Carlsbad water are sodic sulphate, sodic carbonate, and sodic chloride—a combination of sodium compounds. Even the aphorism of the older physicians—"ammonia for the lungs, potash for the kidneys, and soda for the liver"—shows us that we must expect the main action of this combination to be on the liver.

I shall, nevertheless, briefly review the therapeutic actions of these salts, and point out their physiological uses.

* The difference in these two analyses is explained as follows: The crystallised salt represents the solid constituents of the water minus the mother-liquor remaining after they separate out. The powdery salt is the total solids of the *entire* water evaporated to *complete* dryness, and re-carbonated.

1. **Sodic Sulphate** ($Na_2SO_4,10H_2O$) is a saline hydragogue, cathartic or purgative, which has a special action on the liver, stimulating it to increased action. It stimulates the coats of the stomach and intestines to pour out a thin watery secretion, which may amount to diarrhœa when the doses are large. It thus carries away water from the blood-vessels of the chylopoietic viscera, and relieves congestions of the liver and spleen by depleting the portal system indirectly. Magnesium sulphate acts in a similar way, but is devoid of the special action on the liver, sodic sulphate has. Strong solutions of both these salts precipitate the globulin derivatives of blood, and favour the coagulation of that fluid, so that it is extremely unlikely that either of them, in a mineral water, can have any effect in causing absorption of fibrinous exudations. Braun states that the effect of this salt on the intestines is mainly irritative, and that it is little absorbed. Many years ago, Hay of Aberdeen found that the sulphates of sodium and magnesium acted as intestinal irritants and purgatives, even when diluted to so low a strength as 2 per cent. Jaworsky confirms these results in recent years. Nearly all observers seem to agree that the sulphates are themselves, little, if at all, absorbed, and that their purgative and cholagogue actions are due to their irritative effect on the bowel. It decomposes in the alimentary canal in part into sulphuretted hydrogen (which, acting on the small quantities of iron present in the Carlsbad water, is said to blacken the fæces), and into sodic sulphide.

2. **Sodic Carbonate** ($Na_2CO_3,10H_2O$), in the dilute form in which it exists in Carlsbad water, is a

diuretic and mild antacid. It emulsifies fats. On the presence in it of soda depends the alkalinity and fluidity of the blood. It exercises a solvent action on the albumen, fibrin, and fibrin-factors of that fluid. A strong supposition exists that this solvent action of soda on fibrin is the normal method of change of substance (proteid) (Braun). Clinical experience shows that long-continued administration of this salt depresses, thins, and weakens the patient. Excess of soda leads to excessive tissue and other changes. It can dissolve recent inflammatory fibrinous exudations. It is the principal salt in the pancreatic juice of man, and that on which its alkalinity depends. It is the alkali and chief inorganic constituent of bile, and has a powerful solvent action on thickened bile and biliary concretions. When ingested it dissolves off old and worn-out epithelium from the mucous membranes : hence its great use in catarrhal dyspepsia, as it dissolves away the *nidus*, in which injurious bacteria flourish and multiply. The inorganic basis of the fluid portion (serum) of the blood is soda, that of the solid portion (corpuscle) is potash. "Soda is the alkali, the presence of which is most important in the human system. Soda is the fluidifier of the blood." * It is the presence of this salt which gives Carlsbad such a valuable effect in lessening or wholly stopping the excretion of sugar in diabetics.

3. **Sodic Chloride** (**NaCl**) in large doses is an emetic, a cholagogue and hydragogue purgative. In small doses it unquestionably supplies the stomach with material for the manufacture of gastric juice. It aids and stimulates the digestion not alone of

* Macpherson's "Baths and Wells of Europe."

nitrogenous but also of *starchy* foods. It excites rapid absorption and peristalsis. It is always present in constant proportion in the fluids and tissues of the human body, and is necessary in the former for the solution of their proteid constituents, more especially of the members of the globulin family. Wherever active cell formation is proceeding, there we find abundant sodic chloride, *e.g.* in pus, synovia, grey hepatization of the lungs (Braun). In fluid exudations not accompanied by cell proliferation we also find it, as in ascitic fluid. With urea, that ultimate product of proteid metabolism, we find it associated so intimately, that many physiological chemists regard them as forming a definite chemical compound. *The greater the amount of sodic chloride in the blood, the larger is the amount of urea excreted in the urine.* Hence the use of this salt in cases of albuminuria where the excretion of urea is diminished. The quantity of salt in the blood is maintained at a constant strength, any excess being eliminated in the urine. The body retains no great reserve of salt as it does of glycogen. The osmosis and endosmosis between the blood and tissues is mainly dependent on the presence of sodic chloride. Waters containing salt are therefore indicated (1) to stimulate and increase absorption and nutrition ; (2) to increase and complete elimination of effete matters (*i.e.* proteid metabolism) : hence their great use in gout in which the metabolic changes, instead of being conducted as far as the formation of urea, stop short at the stage of uric acid ; (3) to rouse the vital functions of the liver and stomach : hence salt is the great remedy for atonic dyspepsia (the dose to produce these effects varies from 60 grains and

upwards daily in 6 ounces of water); (4) in scrofulous enlargements of glands and scrofulous cachexiæ generally, salt waters stand unrivalled. Such patients are, however, usually sent to more purely salt springs than Carlsbad: such as Homburg, Wiesbaden, Kreuznach, Woodhall, etc.

Action of the Carlsbad Water.—I. General.—1. *On the Alimentary Canal.*—The effect on the alimentary canal may be judged of, from that of a bath of the Sprudel water on the skin. This it whitens, smooths, softens, and rejuvenates, making it like that of a young child. The old intestinal epithelium is softened and gradually dissolved away, exposing a newer and healthier layer beneath. A tongue (whose owner has never seen it clean and free from thick fur for years) is found clean and red, even in the morning. The sodic sulphate produces a slight though beneficial irritation and stimulation of the mucous membrane, leading to a flow of water from the tissues, and is itself little absorbed, according to Braun. This relieves congestion of all the abdominal viscera, more especially of the liver and spleen, reducing them in size. It increases peristalsis, and gentle purgation follows.

2. *On the Liver.*—Soda being the great biliary solvent, it eliminates old and thickened bile, and clears the minute bile ducts and vessels. Congestion is relieved. The pathological results of this are: increased functional activity, leading to secretion of bile of better quality and quantity, more perfect and complete digestion of nitrogenous foods (improved proteid metabolism), and removal of the tendency to formation of increased fibrous tissue. Even early

deposits of fibrous tissue are said to be removed. We are not, so far as I am aware, in a position to positively assert that a very much larger secretion of bile results. What probably occurs is that the vigorous peristalsis caused by the sulphates in the water rapidly hurries on the bile poured out into the upper part of the bowel *before it can be reabsorbed*, and eliminates it by purgation.

3. *On the Mesenteric Glands and Lacteals.*—Old indurations and thickenings are softened, dissolved, and removed—presumably by the sodic carbonate. This permits of free movement of the lymph and chyle. We thus often find that *persons remarkable for spare and lean figures, after a Carlsbad course fill out, become well nourished and plump.* The functions of absorption and elimination are improved and invigorated. As a result the blood becomes purer, and nutrition improves.

4. *Genito-urinary System.* — Urine is copiously evacuated, owing to the increased blood-pressure caused by ingestion of the hot water. This carries away effete and harmful materials which had previously been lurking in the system. The urine voided is richer in epithelial *débris*, and this must be the result of a clearing of the lumen of the urinary tubules and passages. Congestive affections of the ovaries and uterus are relieved, menstruation, which was previously scanty or suppressed, making its appearance in normal amount. Recent inflammatory exudations around womb, ovaries, and peritoneum are said to be dissolved and removed. Those disordered constitutional conditions which lead to the formation of calculi in the kidneys and bladder are removed or

ameliorated. The sexual appetite is reduced. For leucorrhœa and other female complaints the injection of the hot Sprudel or artificial water after Emmet's method produces the best results.

5. *The Circulatory System* is stimulated by the warm water, but later on the power of the heart is slightly lowered by the depressing effect of the free alkali. This leads to slight giddiness, nausea, noises in the ears, faintness, slight loss of memory,* drowsiness, and the usual symptoms of a diminished supply of blood to the brain. The falling off in the heart's power may possibly also be due in part to the diminution in the peripheral resistance caused by the action of the waters in freeing out the portal circulation.

6. *The Respiratory System.*—Breathing is always relieved by a diminution of portal congestion and removal of abdominal fat. It is slightly accelerated by drinking the hot water.

7. *Tegumentary System.*—As a result of impaired nutrition, the skin of malarial cases is often hard and dry, and the hair falls out. Carlsbad causes increased action of the skin by the action both of the water and baths; it grows soft and moist, and hair begins to grow again. Irritative skin diseases such as mild eczema are soothed and disappear. Scleroderma is also benefited.

8. *Nervous System.*—The alkali soothes the nervous system, calming it and diminishing reflex action. *Neuralgias*, being the "*prayer of a nerve for healthy blood*," as Romberg asserts, are often much relieved

* Native patients suffer most from loss of memory during the course. They should be warned of it beforehand, or they may get alarmed.

or cured by the blood-purifying effect of the water. After the course is concluded, the operations of the intellect are rendered clearer and quicker, owing to the blood having been freed from the stupefying and yet irritating products of imperfect digestion previously circulating in it.

To concisely sum up—all the organs of the body concerned in the digestion of food, in the elimination of waste products, and in the purification of the blood are brought into a healthy state and do their work more efficiently, congestions are removed, and the results of recent inflammations dissipated.

The special action of Carlsbad will be dealt with when treating of the various affections in which it is specially efficacious.

CHAPTER VII.

CONDITIONS NECESSITATING THE USE OF CARLSBAD TREATMENT OBTAINING IN TEMPERATE CLIMATES.

Causes of gradual deterioration of health—Causes of Bright's disease—Efficacy of Carlsbad in averting Bright's disease—Dyspepsia—Adjuvant factors in its causation—Defective mastication—Hurried meals — Enlarged tonsils — Ozœna— Defective ventilation—Deficient exercise and sunlight—Congenital dyspeptics—Stomach catarrh—Jaundice—Intestinal catarrh—Dilatation of stomach—Ulcer of stomach—Constipation—Gall-stones and biliary colic—Cirrhosis of liver—Sluggish liver—Albuminuria ordinary and cyclic—Gravel and Contrexéville—Womb congestions—Inflamed piles —Chronic gout, its treatment and diet—Chronic rheumatism— Anœmia— Obesity— Diabetes, its treatment and diet.

CARLSBAD is essentially a remedy for many of those slight ailments which, if neglected for a term of years, lead to serious trouble.

Thus many most serious and fatal affections could be averted if Carlsbad treatment were oftener and

earlier resorted to—not as a spasmodic effort, imperfectly tried for a few days, but as a systematic procedure, carried out with routine and judgment.

An intelligent comprehension of the subject is necessary to secure the sympathetic co-operation of the patient. Without it success cannot be attained.

With a view to contributing to this, some of the main factors of the lives of dwellers both in temperate and tropic climates, leading to a need for a use of the Carlsbad water, will be briefly pointed out.

The **causes leading to gradual deterioration of health** in busy centres of life and work are: a life of overpressure, cold, damp, sunless climate, want of proper ventilation in offices and dwellings, deficient exercise, hurried meals, abuse of alcohol, business and domestic anxieties,* all or sundry of which often combine to produce dyspepsia.

* Anxiety and trouble are powerful factors in producing disease. So is prolonged domestic worry. Highly strung, nervous women are often permanently invalided by the worries of housekeeping, of a large family or staff of servants, or by the irregularities of a husband or child. A horse recognizes a rider unable to control it, and becomes unruly. Domestics, similarly, at once detect a mistress lacking the faculty of management or power of command, and promptly give trouble.

Domestic trouble is an alleged cause of cancer of the liver. Recently I attended two rich Hindus suffering from it. The favourite wife of one had eloped, taking away a large sum in jewellery. The son of the other, after being started in a good business, fraudulently involved his father in heavy losses.

The artificial surroundings amongst which children have been reared in cities, and the things they see and hear there, have led to an increase of hysteria, neurasthenia, irritability of temper, lack of proper moral sense of right and wrong, as well as of duty and responsibility. Persons with these defects are not likely to make good life partners, and doctors are only too well aware of the amount

These causes are also those which produce Bright's disease—a malady which exacts a heavy mortality in every busy centre in the world. No city escapes, no country is free, and even rural parts suffer. The cold, damp, sunless countries suffer most; the warm, dry, equable lands, least. It is one of the forms of senile decay of the kidneys. Our improved methods of diagnosis have brought it into greater notice of late years, and its presence is often now detected where it was previously unsuspected. It is a most insidious disease, and cases may run on to a fatal termination without ever exhibiting any symptoms of serious illness. Fortunately, it is a very chronic affection, lasting often ten to fifteen years.

When fully established, Bright's disease is as "little amenable to remedies as wrinkled skin or grey hair." * Prevention, not cure, must be our aim in combating such a disease.

The main factor in the causation of Bright's disease is indigestion—dyspepsia, considered so slight a thing, *crescit occulto velut arbor ævo*—and floods the blood with the impure products of an imperfect digestion. These irritating products are eliminated from the

of conjugal unhappiness which exists. Women being the most impressionable sex, are likely to be most affected by these modern neurotic developments. Pernicious literature of the problem, introspective, *tædium vitæ*, "sex-hatred," or "new woman" types, accentuate the evil.

Ibsen, Tolstoi in his "Kreutzer Sonate," Turgeneff in his "House of Gentlefolk," Maurus Jokai, and many other writers of great distinction, have described these sad conditions of conjugal infelicity, as found on the Continent, where the evil has progressed further than amongst the Anglo-Saxon races. In such a domestic atmosphere it is not possible to long maintain a normal state of health.

* Osler's "Practice of Medicine."

blood through the kidneys. These organs, through the sustained irritation such products excite, become in time diseased.

Viewed thus, the causation of Bright's disease seems a very simple matter. There are, however, a number of adjuvant factors in the causation of the initial dyspepsia, with which I shall deal later on.

Not alone are the kidneys affected by the irritating products of imperfect digestion, but the arteries and heart also share in the damage done. The interior of the arteries becomes roughened, eroded, and ultimately ulcerated; their walls become stiff, hard, and thickened. These changes offer obstruction to the passage of the blood through the arteries, and the heart is obliged to do heavier work in order to maintain the circulation through them. This tells on the heart in time, and it, too, becomes affected.

As a result, then, of a simple dyspepsia, lasting throughout many years, the arteries, kidneys, and heart become affected with an incurable disease, which treatment is almost powerless to even materially relieve. This clinical picture is not an unusual one; it is, unfortunately, one with which every doctor is only too familiar. Apoplexy, paralysis, or uræmic coma closes the scene. An added horror is the comparative frequency with which insanity clouds the intellect of the sufferer towards the close.

The bright side of the above picture is that it is this state, above all others, which Carlsbad is so efficacious in averting—if taken in time.

Adjuvant Factors in the causation of Dyspepsia.—Dyspeptics are either (1) self-made by their own habits; (2) they acquire it by defective conditions of

work, existence, sanitation, or climate, or it is caused by disease; or (3) they are born with imperfect digestive organs (congenital)—an increasing class.

The self-made dyspeptics are those who are governed by their appetites. In the language of the Indian Penal Code, dyspepsia might be described as "a rash and negligent act, brought about by one's own indiscretion." Young, healthy, vigorous people can allow their appetites free rein, for a short time, with comparative impunity, if they lead healthy, open-air lives, with plenty of exercise. But, under the artificial conditions man has made for himself in the *Dräng und Sturm* of our large cities, only those of exceptional vigour can long stand it.

Intemperance in food is often as injurious as intemperance in drink. All persistent dietetic errors —those of occasional occurrence matter little—bring their own punishment sooner or later. The earlier punishment comes in the form of morning headaches, depression, and irritability next day; the later, in the form of organic disease, if errors grow into habits by frequent repetition.

Ill-temper is simply indigestion—the result of irritation of the nerves by the acid products of imperfect digestion. Like depression, it is a valuable danger-signal. Both can, as Gilbert so humorously points out, "be set right with calomel," or blue pill, in small doses.

Deficient Mastication.—An absolute essential to the proper digestion of food is that it should, when swallowed, be in a fine state of division. If swallowed in lumps, the digestive juices cannot properly act on it. It then decomposes, becomes sour, rancid, develops

putrefactive gases, and produces irritation and inflammation.

Many persons fail to properly masticate their food, and allow it to enter the stomach in a state in which it is almost impossible for it to be digested properly. They may do this from "bolting" it, from having deficient or decayed teeth, from that habit of taking a sip of fluid with every mouthful of food *—a method of eating usually confined to the lower classes, and one more apt than any other to produce digestive trouble, as it causes the mouthful of food to be wholly unmasticated. Scotch dyspepsia (heartburn, waterbrash) is often due to taking porridge in this way with milk. If porridge is made thick, dry, and stiff —liberally sprinkled with well-dried salt† from a muffineer, and eaten dry *with a fork*—it will not produce dyspepsia.‡ After it has been all so eaten, a small drink of milk may be taken, not exceeding about 4 ounces. The Scotch method of "supping" it *with a spoon* after swilling it over with milk, is similarly injurious. Milk puddings disagree with many from the fact that they are not dry enough, and so are swallowed unmasticated. If dyspeptics tried drier foods, benefit would often result. The main reason for the use of zwieback toast (p. 41) is that, being so dry, *it must be thoroughly masticated*, and *cannot be bolted.* For many, fluid with meals is a

* This habit, children are very apt to acquire, if not watched, when eating. Children also often get disordered digestion from decaying teeth, and no good can be effected until the bad teeth are extracted.

† Salt is essential for the proper digestion of starchy, as well as of meat foods.

‡ I have spoken of porridge in the singular here, contrary to the usual Scotch custom, which always dubs it "them."

mistake; it dilutes the gastric juice too much, and so weakens its digestive power. Such cases should drink an hour before, or three hours after, food; they should not take soup with dinner, either. **Hurried meals** are necessarily imperfectly masticated, and so also come under the heading of deficient mastication in producing ill-health.

In children **enlarged tonsils** often originate and perpetuate digestive troubles, diarrhœa, etc. The surface of the tonsils is studded with follicular glands, which emit, in unhealthy states, a putrid discharge. This is swallowed with the food, and infects the stomach and bowels. A putrid **ozœna** * (discharge from the nose) is often swallowed, by children, with similar results.

After being fed, infants are sometimes found to vomit on the slightest movement or on coughing. This is sometimes puzzling at first, but the explanation is always found on examining the tonsils, which are enlarged and meet in the middle line. They rub together and against the root of the tongue on movement or coughing, and so excite reflex vomiting. In older children they had better be excised, but in infants, painting with tincture of iodine and glycerine suffices to remove the enlargement.

* In two cases of digestive trouble from ozœna, the antrum was infected. A hole was drilled through the upper jawbone into it, so as to allow it to drain, and to enable it to be washed out. Both cases lost all unpleasant odour and digestive trouble for a time; but these afterwards again recurred. Both cases were extremely delicate, anæmic girls, who had suffered in this way for years; and my impression was that they had not sufficient constitutional vitality to enable them to fully shake off the malady. One case was greatly benefited by the open-air life of a trip to Kashmir. Early treatment of the affected antrum seems to give the best prospect of cure in these cases.

All causes which lower vitality also enfeeble the powers of digestion. Amongst the most potent of these causes is **defective ventilation,** or, worse still, none at all. Many houses and offices are not properly ventilated. Very few bedrooms have even an attempt at ventilation. In cold weather, bedroom windows are, at night, closely shut, and perhaps felt put over the seams. The occupants for eight or ten hours breathe over and over again, air which has already passed through their own lungs or through those of others. Even this air is further poisoned with the noxious products of the combustion of gas or oil. Is it to be wondered at that people occupying such bedrooms get up in the morning heavy-headed, jaded, weary at the very start of their day's work, or that they develop dyspepsia and pick up consumption? The compulsory provision of ventilators in all buildings seems to me, to be one of the first things the crusaders against tuberculosis should insist upon. **To live with open windows day and night in all weathers is one of the surest ways of keeping in good health.** At first it may give colds, but before long it will be found that he who lives thus very soon gets so hardy that he never catches cold, and keeps in excellent condition, and develops neither dyspepsia nor consumption.

I would also direct most serious attention to the fact that there are a large number of cases of **consumption** which **originate from indigestion.** From neglect of some of the elementary laws of health indigestion supervenes—anæmia follows. The vitality of the whole system is so lowered that the tubercle bacillus, once gaining an entrance into the system,

cannot be shaken off, and a fatal termination rapidly ensues. A healthy, vigorous constitution can, almost always, shake off or defy the tubercle bacillus, provided the dose of infection is not too large. Tubercle bacilli are ubiquitous, and the only way to secure immunity, is to keep the general health well above par.

Want of exercise in the open air during daylight and want of sunshine are answerable for much digestive trouble. Exercise braces, strengthens, and stimulates the entire body, works off the products of imperfect digestion, creates appetite, and increases the efficiency with which digestive processes are carried out. Every one is familiar with the dyspeptic feelings, a day or two of lounging about the house produces.

In the busy, short, winter days of an almost sunless, cold, damp, northern land, it is difficult even for the cultured and more leisured classes to get sufficient exercise, and for busy breadwinners of the middle and lower classes it is often totally impossible.

Without sunlight it is not possible to keep health up to par. **Sunlight is essential** to the proper development of the red colouring matter of the blood (hæmoglobin), as it is to that of the green colouring matter of plants (chlorophyll). Plants kept in the dark grow blanched and weakly, and so do we under similar circumstances. The red colouring matter of the blood carries to the tissues and organs of the body the oxygen of the air taken into the lungs. Without this oxygen the organs cannot properly discharge their functions. If, then, the hæmoglobin of the blood is deficient in quantity or defective in

quality, the organs and tissues receive from it only a modicum of their full supply. The result is impaired action and ill-health. The pallor of sempstresses, waiters, miners, and even of marine engineers and ships' stewards, is worthy of attention as evidence of unhealthy occupations. What has been said will serve to show the importance of not becoming anæmic. Anæmia leads to the development of the atonic form of dyspepsia and to the retention of uric acid in the blood. (See Chapter VIII.)

Dry cold acts as a tonic and stimulant to digestion if the circulation is not weak. In our insular climate we, unfortunately, generally get only damp cold, which chills and depresses. By chilling the surface of the skin, it drives too much blood in on the internal organs, and unduly congests them (see p. 21). In the weak or aged, in cold, damp weather, all the functions of life are carried out with a greater expenditure of vital energy than in mild weather.

In addition to, and apart from, the large amount of digestive trouble which people create by their own indiscretions and disregard of the elementary laws of health, there are a large number of persons born with very weak and imperfect digestion—**congenital dyspeptics.** These are often the children of consumptive, gouty, rheumatic, or otherwise diseased parents. As long as the world exists such people will marry. It would be both impossible and cruel to prevent them. But as to whether any steps should be taken to prevent a too weakly offspring, predisposed to disease *de tenero ungui*, resulting, is an open question.*

* This has been cleverly dealt with in a very able novel by Raimond (Miss Robins), called "The Open Question," which is, unfortunately,

Many such families Nature herself puts an end to, within two or three generations.

Some of these congenital dyspeptics are of great mental ability, and make a bold attempt to play a prominent part in the arena of life. Intermittent work, with frequent relaxations, they may stand for some years—but after forty, when the powers of life begin to decline, their inherited weakness finds them out still more effectually than it does at an earlier age. The more pronounced cases should take early, to some healthy, open-air occupation, such as fruit-farming in a mild climate like California, British Columbia, or the more temperate parts of Australia or New Zealand, or the highlands of South Africa. English winters are found especially injurious to such cases, as they necessitate so much confinement within doors. This leads to anæmia and consequent further deterioration of the general health and digestion. If the winter must be spent in Britain, a mild south-coast watering-place should be selected, such as Falmouth or Torquay. There are, however, some cases the south coast climate will not suit. The selection of a judicious dietary will also help these cases greatly. The difficulty with them, as with so many dyspeptics, is to get them to recognize their own digestive limitations. Within these they have comparative comfort and safety—beyond them they have discomfort and illness.

In Chapter IX. will be found an account of some of the commoner forms of disorders of digestion,

somewhat morbid in tone. The talented authoress is mistaken in her facts and inferences. Consumption is not hereditary—the tendency to develop it, is.

originally written for the guidance of people serving in out-of-the-way parts of India beyond the reach of an European doctor. Above, I have only dealt with the causes leading to the conditions described in Chapter IX., with a view to these causes being, as far as possible, remedied. To Chapter IX. the reader is referred for these commoner functional disorders of digestion and their treatment. This reference should be made here, as the explanation of the details of the physiological process of digestion there given, will help the lay reader to understand much of what follows in the present chapter.

Catarrh of the Stomach is produced by over-eating, rich indigestible food, hot spices, sauces; by over-use of tea, alcohol, or tobacco; by eating at irregular hours and between meals; by cold and wet, especially cold and wet feet; and by business and domestic worries. It is contributed to by neglect of ventilation and exercise.

The **Symptoms** vary according to the causes and to the degrees to which irritative or atonic conditions co-exist with the catarrh. It is hardly possible to get a pure type of catarrh. Almost every case is a mixed type, and has two or three different conditions blended or mixed together, obscuring or tinting the clinical picture.

The usual symptoms are—a feeling of distension and fulness after meals, headaches, and perhaps flushings and uneasiness. The breath is often heavy and fœtid, the tongue, in the morning especially, thickly furred, and there may be a metallic taste in the mouth (called by the alcoholic cases "hot coppers"). Melancholy and depression are usual, and sleep is disturbed;

other cases, again, have a heavy, dreamless, unrefreshing sleep. If the catarrh is due to alcohol, using a tooth-brush in the morning excites nausea or dry retching, and little or no breakfast can be eaten. A further examination of such cases will show that the tongue and hands are both tremulous, the eyes yellow, watery, or suffused with blood. These symptoms are due to the liver being somewhat congested. The patient grows thin, sallow, and anæmic.

Treatment.—The diet, habits, or conditions producing the affection* must be amended, and a prolonged Carlsbad course of from four to six weeks taken. The water should be taken in small doses of about 4 ounces, twice in the early morning, once at 11 a.m., and once again before going to bed at night. The water is given almost cold, so that it may be slowly absorbed, and so stay as long a time as possible in contact with the stomach. The Carlsbad dietary ought to be maintained for two or three months after the conclusion of the treatment, in order to prevent a relapse—a very frequent occurrence.

Such a stomach catarrh may extend down the bowel to where the bile-duct enters. The orifice through which the duct discharges becomes obstructed by inflammatory swelling, and jaundice results.

Jaundice is very amenable to Carlsbad treatment. The water, however, should be given hotter (120° F.) than for gastric catarrh, and in the ordinary 6-ounce,

* In every case the cause or causes producing, maintaining, or contributing to the dyspepsia, must be elicited by a thorough cross-examination of the patient. It is idle waste of time to try and treat dyspepsia by medicines whilst the causes producing it are left unremedied.

and not in diminished doses, night and morning. The state of the patient's strength and circulation must be carefully noted, and if these are found to be failing the course should be stopped for three to seven days, and then only resumed in diminished doses. This is the more necessary from the tedious and depressing nature of jaundice.

If the weather is mild and the patient able for gentle exercise, no confinement to the house will be necessary. Vichy water suits catarrhal jaundice in some ways better than Carlsbad. It is neither so aperient nor so lowering, and therefore more suited for prolonged administration. At the same time, it must be remembered that slight purgation has a curative effect in lessening the inflammatory tumefaction of the bile-duct orifice. A mixture of equal parts of Vichy and Carlsbad combines the advantages of both, and is most efficacious.

The diet must be most carefully attended to, and no acids of any kind allowed.

When gastric catarrh spreads on down the bowel until almost the entire digestive tract is affected, it is called **chronic gastro-intestinal catarrh.** This condition is conduced to by the same causes which give rise to gastric catarrh and by the habitual abuse of purgatives or patent medicines. Chronic constipation is not cured, but only temporarily relieved, by purgatives. To radically correct it the cause must be removed. The cause generally is a deficient flow of bile from insufficient exercise, inappropriate food, or an insufficient quantity of liquid being taken. Every adult should have two or three pints of fluid daily.

The symptoms are often very vague and indistinct.

They are: undefined sensations of abdominal discomfort, general symptoms of indigestion, flatulence, colicky pains or slight tenderness, melancholy and depression, a thickly coated tongue and more or less looseness of the bowels. There are, however, many cases in which constipation prevails. Weakness, sallowness, and emaciation ensue.

Treatment. — Remove the cause, and take the water, slightly tepid, for about four to six weeks—two 6-ounce doses in the morning, one at 11 a.m., and one at night. Stop the course for several days at a time if it weakens too markedly, and resume it again only on reduced doses of 3 ounces. Keep to the restricted diet most rigidly, but allow no stewed fruit, and take great care that no dishes are accidentally seasoned with pepper or other hot spices, as these are all specially injurious. Continue the diet for two or three months after the conclusion of the course, but allow the milder stewed fruits, such as apples stewed with rice, prunes, etc. Prolonged gastric catarrh often results in **dilatation of the stomach.*** Pyloric obstruction † has the same effect. Dilatation is more common in countries having a very hot summer, when long iced drinks are freely taken, or in busy

* This affection chiefly results from over-eating, in patients already affected with gastric catarrh.

† *Ewald's Salol test* is used in detecting this condition. Salol is given with food. So long as it remains in the acid contents of the stomach it is stable. Once it enters the alkaline duodenum it decomposes into salicylic acid and phenol. These can be detected at once by adding ferric chloride to the urine, when a blue colour results. Thus the duration of gastric digestion, in both simple and malignant cases, can be determined. In a malignant case I was able to determine that the duration of gastric digestion was eight hours. The site of the pylorus was palpated, and the enlarged nodule at once detected.

centres of life where overworked men hurriedly eat large meals, under the mistaken impression that food so taken can really nourish and not harm. Americans suffer much from this affection. Low, relaxed, and atonic states of the system, and want of exercise, are also factors in its causation. It can only be cured in its earlier and slighter stages.

Symptoms.—With the symptoms of gastric catarrh, a splashing sound inside the abdomen is heard on sudden movements. The appetite may also be very greatly increased. This is due to the increased capacity of the stomach—an ordinary meal fails to fill it, and it craves for food in further and large quantity. The exact outline and extent of the dilated organ can be made out by distending it with gas. This is done by giving the ingredients of a Seidlitz powder, separately, when the stomach is empty. After distension of the organ by the carbon dioxide so evolved inside it, its size is easily determined by percussion on the surface of the abdomen.

Treatment.—Every effort should be made to take no fluid whatever with meals. Fluid should be taken an hour before, or three hours after food. No effervescing drinks or alcohol of any kind is allowed. Indeed, nearly all cases of gastric or intestinal catarrh will be better without alcohol of any kind. The meals should be more frequent (four in the day instead of three), and smaller in quantity than usual. The water is to be taken as for gastric catarrh.

Gastric ulcer occurs generally in young, anæmic, delicate women. A fixed pain * or tenderness on

* In two cases of either renal gravel or small calculi in the kidney, the pain usually felt in the back has been complained of in the "pit of the stomach"—epigastric region. This is worth noting.

pressure exists over the site of the ulcer. Vomiting after food often, but by no means always, occurs. Blood from the ulcer is very rarely brought up by vomiting. It more often appears in the motions as a black, tarry mass. This latter is one of the few certain symptoms of the disease. The ulcer may perforate completely through the wall of the stomach, sudden collapse set in, and death from peritonitis ensue, unless the patient is saved by immediate abdominal section, excision of the ulcer, and suture of the site. Many such successful cases have recently been recorded. This malady must be regarded not alone as a local trouble, but as the expression of a very weak constitutional state.

Many cases are markedly hysterical from pure weakness, or from the starvation the treatment entails, and it is very difficult—often, indeed, impossible—to tell whether the cases are purely hysterical or really ill. When any doubt exists it should be in the patient's favour. Most regrettable and sad mistakes have occurred from not doing so, and I would strongly deprecate the attitude, now assumed by so many, of regarding *omne ignotum pro hysteriâ.*

Treatment by Carlsbad water is the great hope of salvation for the majority of these very sad and tedious cases. Most of them can be cured by it.

The water should be given almost cold in 3-ounce doses in the usual way, and kept up for five or six weeks. The patient should be put to bed, and, if possible, kept on pure milk diet, 4 ounces of milk every hour for sixteen hours daily. If this does not prove sufficiently sustaining, or if marked hysteria develops

from weakness, soft-boiled eggs and farinaceous foods in small quantities may be given.

Iron-somatose is also most useful. For a patient so confined to bed, work for both head and hands is necessary. It should be of the very lightest kind, and only just sufficient to keep the patient from dwelling on her own illness too much.

Chronic Constipation is a very troublesome affection to deal with, in some cases. Women suffer most, and in all it soon produces anæmia. Liberal doses of the natural powdery salt give relief for a time, and if supplemented at Carlsbad by ascending douches, tonicity may be restored to the bowel. Elsewhere, large irrigating enemata, measuring three or four pints of the artificial water, may be given, slightly tepid. These are best given to the patient lying down from an irrigator hung on the wall. Ordinary enemata never get far enough up the bowel to do much good.

Many cases find it difficult to understand that they are suffering from chronic constipation, and are carrying about masses of fæcal matter which have been retained in the bowel for weeks and months, and that they still have a daily action of the bowels. Yet such is very often the case, and it gives rise to a number of vague undefined symptoms of oppression, melancholy, and indigestion, with much headache.

Every effort should be made to rouse the liver to an increased secretion of bile—the natural laxative, by vigorous exercise and by the application of electricity. These cases should drink at least three pints of fluid daily, eat liberally of fresh fruits, have stewed figs and prunes, and eat wholemeal bread.

With some, a cup of hot coffee in the morning has an excellent effect. The habit of relieving constipation by the habitual use of purgatives should not be acquired. It leads to trouble ultimately.

Gall-stones, so long as they remain in the gall-bladder, seldom give trouble; but once they try to pass out of it they excite in so doing the liveliest suffering (called "biliary colic"). Fortunately, this is usually of short duration. Even the passage of the smaller stones (biliary gravel), the size only of grains of wheat, may cause considerable suffering.

Carlsbad water, even when boiling, cannot dissolve gall-stones. It, however, excites an increased flow of bile, and with this flow the stones have a tendency to escape from the gall-bladder. Thus we find that gall-stones frequently pass during the administration of a Carlsbad course. There are usually a considerable number of stones present in the gall-bladder together, and it is desirable to aim at getting all these evacuated during the one attack. If this can be done, the patient will probably, with the aid of an annual Carlsbad course, remain free of further trouble. But we have no certain means of doing so, and we can only administer copious and repeated diluent drinks during an attack, in order to try and wash out the impacted stone and, if possible, its fellows.

Biliary Colic sets in suddenly with violent pains in the liver, vomiting, often diarrhœa, or collapse from the violence of the pain. Jaundice soon follows. This sequence of events is unmistakable.

Biliary colic and attacks of gout are both very apt to occur during a Carlsbad course. This has a deterrent effect on some patients, unfortunately. If

it is remembered that these attacks clear the system and ensure good health often for years after, this fear ought to be minimized.

Treatment.—The water is given hot, in full doses, generally thrice daily—*i.e.* in the morning, at 11 a.m., and again at night—if the patient is strong enough.

During acute attacks hot Vichy water may be freely given or a hot solution of sodic bicarbonate. Pain can be subdued effectually by chloroform, morphia, or atropia. Sugars or starchy foods should be sparingly given, and liquid nourishment copiously administered. Hot baths and hot fomentations locally are also very soothing.

In the **early stages of cirrhosis** and in **congestion of the liver** the water should be given in the usual doses, but almost cold, so as to act as aperiently as possible. Given hot, it will increase, or indeed cause, congestion in some cases.

Sluggish, Inactive Liver is very often a congenital affection, and associated with aggravated gastro-intestinal catarrh. These cases suffer from digestive delicacy all their lives, and from depression and melancholy. Their condition may be vastly improved by yearly mild Carlsbad courses, and by their learning to recognize and properly observe their own digestive limitations. They should avoid sweets, greasy dishes, and articles of food, raw fruit, pastry, and alcohol in all forms, also cold and damp. Their smoking should be moderate. Dry, bracing, warm air, such as that of Egypt at Assouan, not at Cairo, the Punjab or the inland parts of New South Wales—all in winter only—will suit them better than moist, damp places.

The conditions leading to **Bright's disease** were

dealt with in the beginning of this Chapter. As to the established disease, it is very seldom diagnosed in its initial stage when it might be amenable to treatment. The acute cases resulting from exposure to cold, scarlatina, malarial, and other fevers, often come under treatment for the conditions existing after the subsidence of the acute attack. Mild Carlsbad treatment in the usual way and the water, taken warm, is generally successful in preventing the chronic disease supervening as a permanent and incurable condition. This is the great danger after all acute cases.

There is a **form of albuminuria** occurring mostly in high living, hard exercising, young men. The causes seem to be over-feeding and venous congestion. This condition is frequently only discovered when such cases present themselves for medical examination for life insurance. It is considered that cases presenting this symptom are likely later on to develop Bright's disease. Their lives are consequently not in high esteem with insurance companies. Cases of **cyclic albuminuria,** occurring in the daytime and not at night, and apparently due to the patient keeping in the erect posture during daytime, are also regarded with suspicion, and not accepted, except at a high premium.

Cases recovering from acute inflammation of the kidneys, or having the forms of albuminuria noted above, should eat a considerable portion of their meat diet in the form of ham. This increases the elimination of urea. Salt forms a kind of chemical compound with the urea circulating in the blood. This compound, on passing through the kidneys, is eliminated by them in the urine, in a way in which

they will not eliminate the urea alone, uncombined with salt. These cases, therefore, should have salt ham for breakfast instead of eggs. At other meals they may occasionally have it also. They should clothe warmly in pure woollen underwear, of an open texture, and should have Russian and Turkish baths on alternate days, so as to keep the skin acting. They must not smoke or have any alcohol. A mild preparation of iron also is useful.

After Operations for Calculi in the bladder, or after **inflammation of the bladder or irritation** from great acidity of the urine (a frequent result of the acid forms of dyspepsia), Carlsbad is most useful in quieting down the parts and in reducing acidity. For this purpose it should be given in small doses and warm. During any active inflammatory states of the genito-urinary tract it should be avoided, as it will only do harm.

In the treatment of gravel and small stones in the kidney, Carlsbad can in no way compare in efficacy with Contrexéville. It is well said of **Contrexéville that it is for gravel what quinine is for malarial fever.** This high praise is fully borne out by the results, and an additional merit is that gravel and calculi eliminated under the action of Contrexéville water give comparatively little or no pain in the process.

Gynæcological Applications of Carlsbad.—In reducing chronic inflammation or passive congestion of the womb and ovaries, and often in relieving neuralgias of these organs, its action is markedly useful. Parametritis and perimetritis are also benefited.

Exudations, the result of recent pelvic peritonitis,

are, Dr. Kraus * states, readily absorbed. So also are the exudations around recent inflammations of the appendix (appendicitis). In all these affections the mud or peat baths (*Moor Bäder*), which are such a speciality at Carlsbad and Franzensbad, and have now been introduced at Strathpeffar, are of the greatest efficacy in reducing both suffering and symptoms.

Congestive dysmenorrhœa, and those cases of profuse menstruation accompanied by tumidity of the abdomen, slight enlargement of the liver, and often glandular swellings, depression and sleeplessness, are also improved markedly by Carlsbad. So also is the chronic uterine congestion which results from the various forms of displacement of the womb.

Inflamed and swollen **hæmorrhoids (piles)** obtain early relief from a few days of Homburg or Carlsbad treatment. Pain usually disappears entirely by the second day, and the swelling and throbbing are seldom persistent on the third day. They sometimes, in mild cases, yield on the first day. The water must be taken so as not to purge too violently ; this would simply aggravate the symptoms. If enough is taken to produce one fairly liquid motion every morning it will suffice. The water should be taken cold in the usual 6-ounce doses. It acts by relieving the engorged condition of the liver, on which piles are always dependent. Constipation may sometimes start chronic piles into a condition of active inflammation, accompanied by much pain. The constipation itself is often dependent on imperfect action of the liver.

* J. Kraus, M.D., "Carlsbad : its Thermal Springs and Baths," pp. 66, 67. Trübner, London, 1887. There is ample surgical evidence to prove that peritoneal adhesions *can be* completely absorbed.

It should be guarded against, and all alcohol and overfeeding avoided. In hot and relaxing weather, in the British Isles, even, attacks of inflamed piles run through whole families like an epidemic. Such families usually have defective livers, and all suffer in consequence from piles; these, relaxing weather conditions or dietetic errors in which all participate, start into simultaneous inflammation, so simulating an epidemic.

Gout is simply a form of inactivity, sluggishness, or laziness of the liver—an imperfection of digestion, or rather of blood-purification. As will be seen in Chapter IX., digestion may be broadly divided into two processes. The first is a solution of the food by the digestive juices, so as to get it into a liquid form capable of being absorbed into the blood-vessels of the digestive organs, and into the lacteals. This crude nourishment, thus received into the blood, is further elaborated and purified in the liver. It is an imperfect purification in the liver, which has, up to recently, been credited with the production of gout. Indeed, no new facts or theories have done much more than somewhat modify this view in minor details.

That form of inactivity of the liver which produces gout is markedly hereditary. The liver also gets fatigued, and does its work imperfectly if it has too much work imposed upon it (in the shape of an excessive meat diet, for instance), if alcohol is liberally indulged in (more especially the fermented forms of alcohol, like beer and stout), if sufficient out-door exercise is not taken, if the skin acts imperfectly, and if hygienic conditions, as to ventilation etc., are unfavourable.

All the starchy food and sugar we eat, are, after supplying energy to the body (muscles and organs), mainly eliminated through the lungs as water and carbon dioxide gas, in the breath. The meat food is, however, eliminated through the kidneys in the form of urea. Urea is the perfect product of complete digestion of meat. If the changes which result in urea are imperfectly carried out, uric acid results, or some of its compounds (defective proteid metabolism).

Uric acid or its compounds in the blood are the causes of gout.

These were our views until Roberts' Quadri-urate Theory taught us that uric acid is eliminated from the body as a *soluble* quadri-urate of soda in a state of health. In a state of disease this elimination is retarded. The quadri-urate molecule remains for some time in contact with the blood serum, a fluid rich in sodic carbonate, and takes up an additional molecule of soda, becoming bi-urate—an *insoluble* compound.

This insoluble bi-urate, precipitated in the joints as sharp, crystalline needles, gives rise to the pain and inflammation we know as an acute attack of gout. Circulating in the blood, the bi-urate causes the irritability or the melancholy and depression of gout or dyspepsia.

Almost every one of us, as we grow older, becomes more or less gouty.* This simply means that senile changes affect the liver, and keep it from doing its work with the same vigour and efficiency as in youth. Similarly, the kidneys also suffer a senile degeneration —in its advanced stages one of the many forms of

* Balfour, quoted in Osler's "Practice of Medicine."

Bright's disease—and, as a consequence, grow more or less inefficient as we advance in age.

The most recent view is that of Luff, who affirms that gout is due to disease of the renal epithelium—the function of which in health is to produce uric acid and excrete it. This view covers the facts that the elderly grow gouty, and that they have senile Bright's disease very frequently. Few, however, accept the renal epithelium as the seat of manufacture of uric acid, but assign its production generally to the liver. Luff also asserts that the degree of alkalinity of the blood has nothing to say to the causation of gout—that the salts present in animal food have; whilst those of fruits and vegetables exercise a restraining or curative influence. This would explain the comparative immunity of vegetarians from gout in temperate climates. Amongst the Hindu Jain bunnias (merchants leading a very sedentary life, and who never touch animal food) I have observed a large amount of gout. This I ascribed to the action of malaria on the liver and spleen (see p. 144) causing a greatly increased production of uric acid—an action to which, in my opinion, the great prevalence of stone in the bladder and kidneys in India is also largely due.

In the **treatment of chronic gout** Carlsbad is most efficacious in cases of the florid type, or in those in which there is abdominal plethora—the result of over-eating and under-exercising—or chronic congestion of the liver, the result of residence in hot climates. For other cases, and more especially for certain of the anæmic types of chronic gout, the Contrexéville waters are more suitable.

As in the case of gall-stones, during the use of the water an attack of acute gout sometimes supervenes. This, though unpleasant, is rather salutary than otherwise, as it seems to clear the system and free it from gouty manifestations for years.

Such a result is not met with from the Contrexéville waters.

The Carlsbad waters should, in my opinion, be given rather cool for the first week, and for the second and third weeks hot, so as to have the maximum constitutional effect. To begin on cool water clears the system by purgation of much peccant matter, which if retained would give trouble. A four weeks' course is generally desirable; the quantity of water taken must be varied according to the individuality in each case.

Daily alkaline hot baths, followed by cold affusion and vigorous application of a flesh brush (modified Russian baths), are strongly recommended. It is also often useful to, twice weekly, substitute a Turkish bath for the above.

The **Diet** must be most carefully attended to. Fothergill's alliterative rule of "fruit, fish, fats, and farinaceous foods" is easily remembered and useful. The heavier butchers' meats, such as beef, should be avoided—veal and pork absolutely prohibited, and ham only occasionally allowed. Jellies and rich soups are also undesirable for the gouty; they contain very little nourishment, and are really nearly all urea. Beef-tea is not a favourite with invalids. It and urine have almost the same composition on analysis. The only value beef-tea has as a beverage for the sick or delicate is as a stimulant for the

circulation. An equal amount of tea, cocoa, or hot water would do this as well, if not better.

Stewed Fruits (stewed in the manner given on p. 68) are **indispensable,** and **fresh vegetables,** save those of the watery varieties, such as turnips, cauliflowers, etc., must be taken freely. On the presence in the blood of the salts of fruit and vegetables depends—according to Luff—the solubility of the gouty matter present. The gouty and dyspeptic generally should abjure all kinds of hot spices and sauces. I had almost forgotten to add that the gouty will find it better to substitute fowl and game for the heavier butchers' meat. Occasionally, to vary the monotony, a little good tender mutton may be taken.

The gouty do better without any alcohol. Beer, stout, sweet wines, and liqueurs are all poison for them. If the state of the circulation demands alcohol, allow some whisky or gin and soda, good claret or dry hock.

The more nearly the gouty conform to vegetarianism and total abstinence from alcohol, the better for themselves and their descendants. They should take regular and efficient exercise, *daily* — not intermittently—and if possible in all weathers. Whilst exercise should not be pushed to great fatigue, it should be taken sufficiently to make the skin thoroughly moist.

Although the insurance companies are rather shy of gouty lives, as a general rule it is not a disease which, in its healthy, English-country-gentleman types, tends much to shorten life. When a choice of a profession is open to a young man of a gouty family, he

should choose one giving an open-air life with plenty of exercise.

The sodium salts of uric acid are the most insoluble. On this ground it has been suggested to give the gouty potassic chloride, instead of the ordinary sodic table salt. This might be useful for a time, but it might have an injurious effect on the heart-muscle if continued too long. The suggestion of Luff to give the organic salts of fruits and vegetables instead of table salts, should, if his conclusions are correct, prove a more valuable aid than any we have at present in keeping chronic gouty cases in fairly good health.

It is only the **chronic forms of rheumatism** dependent on functional derangements of the liver or digestion which are amenable to Carlsbad, and these are only so when taken in the earliest stages.

The chronic form of rheumatism resulting from a prior acute attack, met with mostly in the young, and the chronic forms of joint rheumatism met with mostly in the aged, can occasionally be improved by Carlsbad. Both these forms of rheumatism have been observed to occur almost always in persons who have some assimilative error or other defect of digestion. Carlsbad is given in the hope that the digestive defect can be corrected, and so the cause of the rheumatism removed. After this the reparative powers of nature should put the patient right, if structural changes have not already become too advanced.

These cases are often much influenced by mud baths or strong brine baths such as those at Droitwitch. The latter, supplemented by the application of

electricity over the liver, abdomen, and affected parts often give the very best results.

We are much hampered in our treatment of these forms of rheumatism by our, as yet, imperfect knowledge of their cause and nature. Lately some evidence has been adduced to show that arthritis deformans is parasitic. For it, in some cases, Garrod's compound sulphur tabloids are useful. For other cases the Tallerman-Sheffield localized hot-air bath, or the mineral waters of Bath, are said to be efficacious. The Carlsbad mud (peat) baths (obtainable also at Strathpeffar in Scotland) offer as good a hope of alleviation as any other treatment.

Usually it is only for the chlorotic form of anæmia, commonly occurring in girls or young women, that Carlsbad is efficacious. This affection is said to be due to constipation, and to be a kind of blood-poisoning from absorption of the matters retained in the bowel. It is accompanied by a hyperacidity of the stomach, breathlessness, palpitation, and suppression of the menses.

The treatment is to get rid of the constipation—the cause of the disorder. To effect this, give the water cold so as to act aperiently once or twice each morning. If necessary add extra Carlsbad salt so as to insure aperient action. An iron preparation (like the Pil. ferri et aloes gr. ij) should at the same time be given twice or thrice daily with food. This treatment soon re-establishes the menstrual flow, and with its return comes an improvement in the quality of the blood.

The remarks on p. 61 with regard to an insufficient quantity of fluid being a cause of constipation, should

be referred to in this connection. Women of good social position are more often neglectful in this point, than others. Insufficient exercise, also, is an important factor in the causation.

Anæmic patients often get diseased cravings for those articles of food which are the most injurious for them. So strong are these cravings that it is little good in advising them not to take such things as pickles, for instance—a favourite condiment with the anæmic. In India, and indeed in many other countries, anæmic girls, married women, and children very commonly eat earth or mud with apparent relish. These patients also esteem cinders and charcoal as especial dainties.

Obesity often depends on some digestive or assimilative error, the exact nature of which it is not possible to discover. Stout people are often very small eaters —everything they eat seems to produce only fat. Stoutness is found, in many cases, in those of the highest intellectual powers as well as in those mentally below the average. The latter are often the children of neurotic, neurasthenic, intemperate, or rheumatic parents, and excessively fat children or adolescents are found in some decaying or degenerate families running on to rapid extinction. Many children are, however, very fat from no cause other than some temporary error of feeding. When a boy or girl approaching puberty grows rather rapidly very stout, it should excite alarm, and early resort to a good "digestion" specialist should be made.

Anæmia, a lazy, indolent, luxurious life in a city, and over-feeding, all contribute to the development of fat.

Any course of continuous purgation continued for

a time, will temporarily reduce obesity. What we must attack are the digestive and dietetic errors producing it. Carlsbad, given cool, in large doses of eight ounces four times before breakfast will ensure a vigorous aperient action. Marienbad water is even more vigorous, being richer in aperient salts. Careful attention must always be paid to the state of the patient's strength and circulation, and the purgation must be most carefully kept within the limits of his strength and endurance.

Many plans have been proposed to reduce bulk by dieting, but perhaps the simplest and most efficacious of all is to merely take no fluid whatever with meals. Fluid can be taken an hour before or three hours after food. The habit of taking meals without drinking anything is at first irksome, but is soon acquired; and if a drink is taken an hour previously, no inconvenience or thirst will be felt. Frequent Turkish baths and an open-air life in the country are useful adjuncts to the above treatment. (See remarks in Chapter X. on thyroid extracts.)

Diabetes is much more prevalent in the tropics than in cold climates. It is characterized by the continued presence in the urine of sugar. As to what is the real cause of this condition we are as yet uncertain. It can be produced in animals by injuries to certain portions of the nervous system, by overfeeding with sugar, and by certain drugs (phloridzin). The sugar and starch we eat are changed into glucose, and rendered soluble in the intestine. They are next absorbed by the intestinal blood-vessels, carried to the liver, where they are by its action converted into a kind of insoluble animal starch called glycogen.

The liver keeps giving out to all the blood which passes through it, small quantities of glycogen, which are at once converted again into sugar for the needs of the body. Thus by an automatic mechanism the quantity of sugar in the blood is kept constant. Some consider that this process is more or less concerned in maintaining the constant temperature of the body.

If, however, the nerves governing the flow of blood through the liver become paralyzed, and allow the vessels to relax and a large stream of blood to rapidly flow through, it is found that the conversion of sugar into glycogen does not take place, and true diabetes results.

Taken in conjunction with the statement (on p. 127) that a malarial or tropical patient resembled an animal with its splanchnic nerves cut, and had as a result thereof more or less vaso-motor paralysis of the blood-vessels of the abdominal viscera—these facts are very pregnant with significance as to this being the possible explanation of the frequency of diabetes in the tropics.

Carl Braun clinically divides this affection into the *greater* and *lesser* diabetes.

In the *greater* form the urine contains over four per cent. of sugar, the emaciation is rapid, and the case runs on to a speedy termination.

In the *lesser* variety, the urine usually has only one to one and a half per cent. of sugar, the patient is little emaciated, and is able to continue up and at light work often for fifteen or twenty years. In India I know many cases which have had diabetes for upwards of twenty years, and yet enjoy a fairly comfortable existence.

The causes of the disease are said to be over-work, over-worry, over-feeding, and over-drinking, a sedentary city life, and excessive sexual indulgence, which is, in India, in my opinion, one of the most universally potent factors in producing the disease.

The symptoms are great thirst, with dryness of the mouth, voracious appetite, emaciation, frequent micturition, and the persistent presence in the urine of sugar. The skin grows very dry and harsh. Boils and anthraxes form. Some cases develop cataract, and many phthisis—an ending easily preventible under proper modern methods. In nearly all cases there is considerable weakness. The "sweet apple" or ethereal odour from the breath of many cases is due to acetone (one of the ketones) produced in the body. Its accumulation in excess leads to the occurrence of "diabetic coma."

Treatment.—For the *lesser* type of diabetes much can be done in the way of treatment and dieting to prolong life and render it fairly bearable, if not pleasant. These cases should have once yearly, or twice, should exacerbation of their symptoms call for it—courses of Carlsbad, Vichy, or Neuenahr waters. Carbonate of soda in the particular combination in which it occurs in these waters has the effect of materially checking or limiting the abnormal production of sugar. It also seems to act by flushing out the system, and for a time washing it free of sugar in abnormal amount.

Care should be taken to give diabetics only a mild course of treatment, and not to allow them to become unduly reduced by it. They will not stand reducing

treatment to any extent. The water should be given hot, so that it will not purge. Four-ounce doses—thrice every morning, with another glass before going to bed at night—will generally be found to suffice. If any complaint is made of weakness, reduce the amount of water taken, or stop it altogether for a few days.

No other medicines, save opium or codeia, appear to have any effect in diabetes. Both drugs tend to check the excessive sugar production, and may be taken habitually, in small doses, for long periods. A pill containing a quarter to a half or one grain of opium, twice or thrice daily, suits many cases well.

Diet.—The object of dieting is to lessen the amount of sugar produced in the system by diminishing or excluding sugar, or sugar-producing articles (starches) given in the food.* The patient finds very often this restriction so unpleasant, if harshly and suddenly carried out, that he gives way either to disgust or despair. Those who have never tried it can hardly realize what it would be, to wholly give up even bread. So marked is the antipathy to such deprivation that, in my opinion, except in extreme and threatening exacerbations, it is inadvisable to wholly stop bread. The stoppages of sugar and starches should be gradually carried out, and not suddenly enforced—the forbidden articles being withheld one by one with a few days' interval between each.

The substitutes for bread are gluten and almond

* It is analogous to Haigs' method of preventing or relieving gout by stopping all nitrogenous food, from the error in digesting which, gouty matter is produced.

bread, "soya" and cocoanut bread. All these are liable to be very hard, unpalatable, and indigestible. In fact, there is no really satisfactory substitute known for bread. Bran bread or brown wholemeal bread contains less starch than ordinary white bread. It is, in consequence, largely used by diabetics. Chocolate without sugar—or sweetened with saccharin—is used at both Vichy and Carlsbad. Potatoes, sweet turnips, carrots, and other articles containing large amounts of starch are, of course, excluded.

The main aliments must, however, be fish, fowl, meat, eggs, game, and nitrogenous foods of all kinds. To these must be added fresh vegetables such as contain no, or a minimum of, sugar—*e.g.* tomatoes, spinach, celery, endives, water-cress, asparagus, green cabbage, etc. Of fruits, lemons and oranges may be given, the latter sparingly in exacerbated cases. All ordinary chronic cases do better when allowed all the common fruits in moderation. Even urgent cases might be allowed to have onions in default of other fruits as good anti-scorbutic food.

The prohibition of shell-fish and mollusca, owing to the sugar their flesh contains, is fanciful, and diabetics can take them freely. All milk, cream, and cheese products can be taken freely when unsweetened or unmixed with flour or starches.

Beer, sparkling wines, and sweet aërated drinks are forbidden. Tea, coffee, cocoa, chocolate, unsweetened lemonade, and clear soups can be given freely.

Patients should be kept under careful supervision, and periodically weighed. When the amount of sugar excreted grows excessive, the diet must be

carefully restricted for some time, and a mild course of Vichy, Neuenahr, or Carlsbad given. At other times these cases may be allowed a moderate quantity both of brown and white bread, fruits and vegetables. This plan will be found to suit them better than the extremely restricted dietary once allowed.

The urine should be quantitatively analyzed at frequent intervals, so that the physician may have reliable and accurate data upon which to form his opinions. The sample of urine analyzed *must be taken from the collected excretion of a full period of twenty-four hours.* A sample of any other kind is practically useless, as accidental circumstances may dilute or concentrate it, and so give rise to fallacious results.

Patients should be warned that if they do not refrain from undue indulgence in farinaceous foods or sweets, that they are liable to be suddenly assailed by fatal diabetic coma, and that a Nemesis waits on disobedience of the doctor's orders.

Even a pure meat diet, however, will not keep some diabetics' urine free from sugar. The complex proteid molecule contains within itself a hydrocarbon molecule which is set free in digestion and appears as sugar.

CHAPTER VIII.

CONDITIONS NECESSITATING THE USE OF CARLSBAD TREATMENT OBTAINING IN TROPICAL COUNTRIES.

I.—Malaria: its Nature and Effects on the System.

The malarial parasite—Effects of malaria on digestive organs and constitution—Spleen, liver, Bright's disease—Effects of hot climates on digestive organs—Tropical cirrhosis—Degeneration of heart—Anchylostomiasis—Sudden death from pulmonary thrombosis—Neuralgia—Skin affections—Ulcers in the mouth—Oriental sores—Tropical anæmia—Malarial rheumatism and paralysis—Scurvy—General catarrh of mucous membranes—Catarrhal enteritis—Increased production of uric acid under influence of malaria as a cause of stone in bladder and kidney in India—Treatment of constitutional malaria.

In the tropics the conditions of climate, environment, food, exercise, and work differ essentially from those of cool climates. In addition to the affections of temperate climes, a number of diseases assail humanity which are peculiar to the tropics, and which are little known or understood outside their own habitat.

The first and most important of these is malaria. It will be necessary for me to very briefly point out the nature of malaria, how it affects the internal organs, how it and a hot climate together undermine and break down the constitution, and how these results may be either averted or remedied, wholly or partially.

Laveran, a French army surgeon, in 1880, found that the red blood-corpuscles of patients suffering from malarial fever contained an organism peculiar to the disease. It was named *Plasmodium malariæ.* This organism really belongs to the Protozoa. It is supposed to gain entrance to the human system through drinking water, or to be inhaled as dry dust.

More recently the agency of the mosquito in spreading the disease has been the subject of much research. Bignami was of opinion that the mosquito, by its bite, infected man with malaria. Manson, however, suggested that the mosquito became infected from man and animals, and that its larvæ and dead body then contaminated drinking-water and dust. Major Ronald Ross, of the Indian Medical Service, investigated with great labour, care, and skill this suggestion, and has succeeded in tracing the malarial organism from man into the mosquito's stomach and body. So far the life-history of the plasmodium has been traced both in man and in the mosquito. A gap still exists in this life-history, and it may be some time before further progress is made. The results already attained are, however, most encouraging. They rest on a firm scientific basis of experiment and observation, and for precision could hardly be excelled.

The malarial parasite develops in the red blood-corpuscle and ultimately destroys it, leaving only a mass of black pigment. This change, affecting a large number of corpuscles, produces the profound pallor and anæmia of malarial patients.

Nature defends herself against the *Plasmodium malariæ*, when it has gained an entry into the body, by sending large leucocytes (white blood-corpuscles) to eat up the intruding parasites. These are, however, generally too numerous to be so eaten up, and succeed in making an "effective occupation" in the blood or system. There their presence and multiplication excites usually a benign form of intermittent fever—ague—the tendency of which, after some recurrences, is to pass off, and a good recovery results. In some cases, and at certain seasons of the year (summer and autumn), the fever assumes a much graver form, is more continuous, presents symptoms of a low adynamic type, and in the most serious cases,* coma, followed by death, may rapidly ensue. These are known as the malignant types of fever. In the Punjab, and especially at Peshawur, the fever is of this pernicious type; begins with vomiting and diarrhœa, and may end in coma, as described. It has often been mistaken for cholera. *In malignant malarial cases I have found the urine loaded with leucocytes containing a large amount of dark pigment*, evidently derived from the maturation of the plasmodium in the blood.† In recovered cases these pigmented

* The coma in these cases is due to the blocking of the small blood-vessels in the brain with a large number of the malarial parasites, and is practically a form of apoplexy.

† This I regard as an important diagnostic point, and one capable of

leucocytes migrate into the malpighian layer of the skin, and give to these patients that dusky pallor or peculiar leaden hue, known in England as the "grey Indian appearance."

The continued action of the malarial parasite on the system leads to—

1. **Congestion of the internal organs,** more especially of the **digestive** organs.
2. **Catarrh of the mucous membranes.**
3. A profound **anæmia.**
4. A general **degeneration and atrophy of the entire digestive organs,** and secondarily of the **heart** and lungs.
5. An **increased production of uric acid** in the system, mainly due to degeneration or inactivity of the liver,* resulting frequently in the formation of renal gravel, renal calculi, or calculi in the bladder—a disease of very common occurrence in India.

For a combination of several of these conditions I have elsewhere† proposed the term **constitutional malaria.** Some such term is necessary to concisely express such a combination of results.

Congests the Internal Organs, Liver, Spleen, Kidneys.—Malaria, and especially attacks of malarial fever, cause congestion of almost all the organs

a more rapid application, clinically, than the somewhat tedious examination of the blood for the malarial organism. So far as I am aware, attention has not been previously directed to this fact.

* If Luff's views are accepted, this formation of uric acid would be regarded as due to disease of the renal epithelium.

† In a paper read by the writer at the Indian Medical Congress, Calcutta, 1894, "On the Macro-Pathology of Constitutional Malaria" (see "Transactions of the First Indian Medical Congress").

in the body. Owing to their great vascularity the liver and spleen suffer greatly, become darkly congested and often enlarged. Malarial congestion manifests itself in the dark races usually in the form of enlarged spleen; in the white races as enlarged liver. The main incidence of this internal congestion is on the digestive organs, but the uterus, bladder, ovaries, and kidneys are also affected. The respiratory organs are not exempt. Pneumonia sometimes ensues. During fever, cough often develops, especially in children from congestion of the respiratory passages.

On several occasions I have seen the kidneys so much congested as to give rise to acute inflammation (acute Bright's disease), with all the usual symptoms of smoky and bloody urine and albuminuria. Such acute attacks often result in the insidious onset of chronic Bright's disease. The acute attack of kidney inflammation apparently gets quite well. The patient resumes his wonted occupation. After some time he notices he is pale, delicate, languid, weak; his eyesight is failing, he has headaches, nausea, and perhaps vomiting or diarrhœa. Should the actual condition not be early diagnosed and treated, some months or perhaps some years later apoplexy or uræmia supervenes and puts an end to life within twenty-four hours. Fatty and large white kidneys are also common in malarial patients.

Illustrative Cases, I.—*Chronic Bright's Disease unsuspected —Death.*—Mrs. A. B., æt. about 45, came from the plains stating she was feeling weak, and merely asked for a tonic. Inquiry elicited that her sight was failing ($V = \frac{6}{24}$), that her face was puffy on getting up in the morning, that she had had kidney trouble after continued fever four years previously.

Ophthalmoscopic examination revealed small white patches and hæmorrhages in both retinæ, with advanced optic neuritis.

The urine contained one-third of albumen and only one per cent. of urea. Her husband was informed of her grave condition, that nothing could cure her, and that the end might occur at any time. It occurred about ten days later, suddenly, from uræmia. This illustrates the insidious nature of such cases.

Case II.—*Acute Bright's Disease—Recovery.*—Mr. C. D. contracted a sharp attack of malarial fever, on return from shooting amongst the lower hills. Smoky and bloody urine appeared on the fourth day. He continued in a very critical condition, notwithstanding vigorous treatment and frequent wet hot packing, for about fourteen days. He made a slow but good recovery, and now, eight years later, is alive and in perfect health. Knowing his liability to a return of the malady, he takes great care of himself, and gets his urine chemically and microscopically examined every few months.

The ordinary malarially **enlarged spleen** is the purest instance of the congestive effect of malaria on an organ. It is easily felt under the arch of the ribs on the left side—when the patient lies on his back and draws up his knees—as a hard mass. If neglected, it may terminate in anæmia, dropsy, and death after years of feeble health.

Distinctly curable up to about nine months or a year's duration, in its later stages, after chronic cirrhotic changes have occurred, it is as distinctly incurable.

Treatment.—Spleen is easily cured by Carlsbad, Vichy, or Marienbad, tonics, iron, salines, hot salt water or mud baths, and the external application of strong iodine liniment, red iodide of mercury ointment or electricity * over the enlarged organ.

* Electricity should be applied as slowly interrupted induced currents (faradization). This I believe to be the most efficacious of all local treatments.

The general health should be carefully kept up to par by nutritious diet, good Burgundy, and above all a thoroughly open-air life, in a warm *(not hot)* sunny climate—Kashmir, the South of France, or Australia. Extreme cold is very injurious, and may induce the form of sudden death alluded to later on. As in the case of chronic uterine congestion, *spleen cases should be cautioned against taking hot drinks*, and anything over a very slight amount of alcohol. Just enough Burgundy to act as a tonic and appetizer may be given—half a claret-glassful will suffice—and hot tea or soup may be either very slowly sipped or, better still, allowed to become tepid. Alcohol and hot drinks congest the abdominal circulation, and are therefore to be avoided by such cases. Spleen cases should never be permitted to go on field service or undertake any duty entailing hardships, exposure, or over-fatigue—they are certain to break down under it.

Malarial Hepatitis.—The liver comes in for a very large share of the general congestion caused by malaria —so great, indeed, that a true inflammation or hepatitis sometimes ensues. This is attended by pain, tenderness, fever, and slight jaundice. A few grains of calomel at night, followed in the morning by a liberal dose of Carlsbad salt in water almost cold, repeated daily for a few days, generally subdues the attack sufficiently to give relief. More or less chronic engorgement remains for some time, and in many cases permanently.

Chronic Catarrh of Stomach and Intestines.—Manifests its presence at an early stage by the thickly furred tongue known as the Indian or tropical

tongue,* by frequent and irregular attacks of diarrhœa and of slight jaundice, with heavy, muddy, yellow eyes and pale, whitish motions. A deep-seated tenderness is often felt in the abdomen—due to patches of enlarged vessels and localized chronic inflammation in the bowels. Appetite after fever is generally conspicuously absent unless the stomach is the seat of enlargement and dilatation. The latter often results from the large quantities of fluid we drink with meals in the hot weather, and gives rise to excessive appetite. The congested intestinal patches leave behind on recovery areas of pigmentary degeneration. The entire digestive functions lose power and vigour under the action of malaria and a hot climate. The secreting glands, more especially those of the stomach, waste and degenerate, and on this account even the most nutritious diet often fails to benefit a malarial patient.

Treatment.—There is only one class of remedies suitable for such cases—alkalies. The best form in which to administer them is Carlsbad. The natural water in small doses (3 to 6 ounces to start with) taken slowly and at a lower temperature, *i.e.* about 70° F., morning, noon, and night, will be found most efficacious. Catarrhal cases need a longer course of treatment—four or five weeks. The water is given colder to prevent its too rapid absorption, and to ensure its staying as long as possible in contact with

* The very thick furring of the tropical tongue will be realized from the following: An officer on sick leave consulted an Irish doctor in Melbourne, who, on seeing his tongue, exclaimed, "My dear sir, you have a tongue on which you could sow potatoes!" The description is clinically an excellent one.

the lining membranes of the digestive tract—where it dissolves off the old unhealthy epithelium, whilst a new and healthy layer springs up from below it to take its place. In this condition acids are most injurious, and should on no account be permitted either as fruits, sauces, or drinks; mild stewed fruits prepared as directed in Chapter V. should be given —as tropical patients are very liable to slight scurvy from the rapid way in which their powers of assimilation fail. This point is not sufficiently borne in mind, and its neglect retards recovery. An apple roasted in the oven, served with plain cream, no sugar, or with some bread and milk, is one of the best ways in which to give fruit in these cases. A few weeks' treatment makes a most marvellous change in the patient—his eyes and complexion clear, his appetite increases, despondency vanishes, and he begins again to feel a pleasure in existence.

Uterine and Ovarian Congestion.—Almost every woman feels pain and tenderness in the womb, ovaries, and back during an attack of fever. This is due to congestion resulting from malaria and the high temperature. Continued attacks of fever cause enlargement and chronic congestion of the womb. I have many times found the womb enlarged to one or more inches above the normal size, in (European) women suffering from malarial fevers. The lining membrane of this organ also becomes the seat of chronic inflammation (catarrhal endometritis)—leading to excessive loss of blood at each menstrual period. This affection requires local as well as constitutional treatment to cure it. Congestive enlargements of the womb may be caused by mere residence

in a hot and relaxing climate. They are the usual causes of uterine displacements.

Neuralgic and inflammatory affections of the ovaries are also frequently the results of fever. An attack of malarial fever occurring during the menstrual period is sometimes accompanied by a blotchy raised rash, very itchy, and oftener an angry red than dull white; this is *urticaria menstrualis*, modified by malaria. It is an indication that the patient's digestive system needs a short course of Carlsbad.

Hot climates also Congest Internal Organs.—Not alone have malaria and tropical fever a marked effect in causing congestion of the internal organs, but even a hot climate has of itself the same effect. This effect is produced as follows: When we perspire freely under the influence of heat, our skin grows cold as the perspiration evaporates from it. This cold causes a contraction of the cutaneous vessels and drives the blood in upon the internal organs. This correlation between the vascular conditions of the skin and the internal organs should never be lost sight of.

A malarial patient to a certain extent resembles an animal in which the splanchnic nerves have been divided, producing vaso-motor paralysis of the blood-vessels of the abdominal viscera.

In the tropics, then, our internal organs are generally water-logged, as it were, by the presence in them of an unusual amount of blood.

In a cold climate the muscular walls of the blood-vessels are contracted by the bracing effect of cold, and so help to drive on the blood within them.

In a hot climate, on the other hand, the muscular

walls of the blood-vessels share the general relaxation experienced by our skeletal (of legs, arms, body, &c.) muscles, and thus allow blood to accumulate and stagnate in the various internal organs.

When an organ has too much blood stagnating in it, and has not a sufficient supply of fresh blood continually being pumped through it by the circulation, it is deprived of its proper nutriment—its vitality and energy sink—it does its work imperfectly—it has little power of resistance to any adverse influences which attack it.

On an organ so water-logged and sodden with stagnating blood a chill readily acts, producing congestion or inflammation. The liver from its great vascularity is most readily attacked. *It is rare at an Indian autopsy to see a liver which is not more or less congested.*

Malarial or Tropical Cirrhosis.—It is a well-known rule in pathology that when an organ remains chronically congested for a considerable time, a permanent increase or proliferation of its framework (fibrous) tissue results. This change does markedly occur in the spleen, but is attended by an increase and not by a diminution in bulk, as is usually the case in cirrhotic changes. Increase of the natural fibrous tissue of the liver also occurs very generally. In this case it is also attended by an increase in the size of the organ. The so malarially enlarged and congested liver, when the condition has become permanent, is really in a state of hypertrophic cirrhosis.

Osler denies the occurrence of true atrophic malarial cirrhosis in which the liver is much shrunken in size.

It is difficult to say whether the cases met with in the tropics are due to alcohol, syphilis, malaria, or ginger-eating. This latter is a common practice of the Brahmins and other high-class Hindus,* who lead, as a rule, highly abstemious and moral lives, and who never touch alcohol. Amongst them cirrhosis of the liver of the atrophic type is of frequent occurrence, and is ascribed to their ginger-eating habits. They also use cardamons, red pepper, and other hot spices liberally. These would all have the same effect.

Alcohol, as an etiological factor of atrophic liver cirrhosis, appears to me to have been rather over-done, to the exclusion of other and less-understood causes. That these latter of many and various kinds, quite apart from alcohol, do exist, every clinician of experience will, I think, admit. The recent researches of Adami of Montreal tend to establish that certain forms of cirrhosis are dependent on the migration of micro-organisms from the bowel to the liver. There the irritation they produce results in the proliferation of fibrous tissue, and constitutes the condition we know as cirrhosis. These results, if confirmed by other observers, throw a tremendous flood of light on much that was previously dark. They also satisfactorily explain many of the liver conditions which prevail during attacks of acute and chronic dysentery.

* The Jains and Vishnuis will not touch any form of animal food whatever, nor will they in any way destroy animal-life—not even that of vermin. The Jains boil the water they drink, lest they should destroy the animal-life it contains in digesting it. This sect also will not eat any vegetable which grows below the ground. Beetroot they look upon with great horror, and say its colour is that of blood.

Case III.—Mr. E. P., who served for many years in Assam, complained of low fever, enlargement and excessive pain in the liver. The ureameter showed him to excrete only 0·5 per cent. of urea. An abscess being suspected, under chloroform, hollow aspirating needles were inserted into his liver in eight different places. No pus was found, but the needles, instead of quietly passing in through soft, normal liver tissue, grated on hard and resilient masses as tough as indiarubber. It was an incurable case of malarial cirrhosis with perihepatitis. Strong doses of sodium sulphate and alkalies gave him considerable relief from pain and constipation. Aspiration invariably gives such cases the greatest ease and comfort by local abstraction of blood.

If taken in the early stages within six or nine months, this affection is curable; but later on—when the contracting fibrous tissue occludes the vessels and dropsy often supervenes—nothing can be done save to relieve the patient temporarily by frequently tapping the abdominal cavity. Malarial cirrhosis rarely runs on to dropsy in European cases, but it very commonly does so in natives.

Degeneration of the Heart.—In advanced malarial cases the heart is found small, pale, thin, and weak—the ventricular walls being reduced to less than one-half their normal thickness.

The muscular tissue of the heart is atrophied and fattily degenerated.

The circulation of such patients is very feeble. They feel cold greatly; are subject to headaches, giddiness, loss of memory, noises in the ears, nausea, vomiting, faintness, and shortness of breath.

Treatment.—These cases have a very feeble hold on life. I have seen two die from an ordinary dose of Epsom salts, and many die from exposure to cold. For such extreme cases *Carlsbad treatment is wholly*

inadmissible, and would probably prove rapidly fatal.

The milder forms of this affection, which I believe to be distinctly curable, are best treated by an immediate removal from exposure to malarial influences—*i.e.* out of India—to a climate which is not too cold, such as the South of France or Australia. On the voyage they should have hot salt-water baths, digitalis, and iron. Whilst in the hot salt-water bath, electricity should be applied over the spleen and liver for about five to ten minutes daily, in the form of slowly interrupted induced currents. After convalescence has properly set in, a very mild course of Carlsbad might be cautiously ventured upon, beginning with a single dose of only 4 ounces of the natural water, warmed to about 110° F., every morning, and gradually increasing the dose according to its effects. The patient should have a cup of hot tea or soup before taking his daily hot salt-water bath. As the case improves, a course of resisted Schott movements should be entered upon cautiously, and graduated walking up hills.

A similar condition of the heart is observed in **anchylostomiasis.** Anchylostomiasis is a disease of tropical and sub-tropical countries characterized by progressive anæmia, cardiac weakness, debility, loss of energy, dyspepsia, pain in the pit of the stomach etc. It is due to the presence in the upper part of the small intestine of large numbers of a small worm, about half an inch long, named **anchylostomum duodenale.** The presence of these worms can only be with certainty determined by the microscopic examination of the motions by an experienced observer, trained to recognize their ova. This disease occurs

much more frequently than is generally supposed, and all cases of obstinate anæmia, supposed to be malarial, should have their motions microscopically examined with a view to determining its presence.

Amongst coolies employed on railway and other construction work it causes frequent and heavy mortality. It is propagated by the dejecta contaminating drinking-water; or by the ova being conveyed into the mouth in eating food with unwashed hands. A severe epidemic affected the miners on the St. Gothard tunnel in 1880 (Sonsino, Davidson, and Manson).

Thymol in three or four doses of 10 to 30 grains each, after a few days' liquid diet and preliminary purgation, ejects these uninvited guests. The real treatment, however, lies in prevention.

Sudden Death in Malarial Cases often results from clotting of blood in the great vessels, more especially in the pulmonary artery. This subject has recently been ably treated by Sir Joseph Fayrer, Bart., K.C.S.I., in a paper in the *British Medical Journal* for September 23rd, 1893.

The sudden deaths of many Anglo-Indians within a very short time after retirement to the cold winters of Britain are doubtless often due to this cause.

Malarial Neuralgia—most frequent as "brow-ague"—is a painful affection. I have found 5 to 8 grain doses of exalgin the most efficacious of all drugs in relieving it. Tonga is also useful.* Simple change of air often succeeds better than anything else, and effects a cure at once. Croton-chloral has, in my hands, been invariably useless. Quinine is uncertain in its results.

* So are Antikamnia and lactophenin.

Given in small tonic doses of about 1 grain of the hydrochlorate, and combined with 1 grain of the tartrate, or ammonia-citrate of iron, it is often most useful. Of all local applications, the most effectual I have found to be painting the affected part with liniment of iodine. Of course, it is unsightly for a day or two, but it often gives instantaneous and permanent relief. Sciatica is also of frequent occurrence.

Tropical Affections of the Skin and Epidermal Appendages.—The skin often becomes dry, hard, and scaly, or glazed and shiny. Both these conditions indicate mal-nutrition from lowering of the constitution and weakness of the circulation. The hair falls out, and premature baldness ensues. The hair which remains is dry, hard, thin, and staring. The nails dry and become brittle.

A red rash almost exactly resembling that of syphilis is occasionally met with in the tropics. It apparently is due to digestive disturbance, as also are peculiar pricking and tingling sensations in the skin, resembling those of prickly heat, but without the slightest appearance of any eruption on the skin itself.

As to prickly heat (*Lichen tropicus*), it is simply a skin inflammation due to the excessive action of the sweat-glands. Though unpleasant, it must be regarded as a decidedly healthy disease—if such a paradoxical description is allowable. It prevents the occurrence of internal congestions, to which so many tropical illnesses are due.

It occurs more frequently in the gouty, rheumatic, and dyspeptic, in whom, presumably, the sweat is more acid and irritating. When the itching becomes unbearable, Fuller's earth, oxide of zinc, or solution

of copper sulphate, 20 grains to the ounce may be applied. To stop all punkahs, and go about the house clad in very thin cotton pyjamas—made of mul mul —has been found to give relief. It, however, involves great risk of chill.

Boils are often very troublesome in the hot weather in the tropics. They ought to be always taken as an indication that a change—even a short one—to the hills is necessary. A few days of Carlsbad treatment often aborts an attack. Generous diet, in limited quantities, must be given, also good Burgundy with meals. As boils are undoubtedly due to surface infection of the hair follicles, a strong carbolic, izal, or other disinfectant soap should be used in the daily bath. Poulticing relieves pain, but induces more boils. The tops of the boils are best covered with a mixed ointment of equal parts of oleatum hydrarg. and ungt. creasoti on lint, or with emplast. ammoniaci c. hydrarg. (old B.P.) alone.

Dyspeptic Ulcers in Mouth.—Small ulcers frequently form inside the mouth on the gums, tongue, and inside the cheeks. These may be mistaken for syphilis, but are distinguished by their healing up without the loss of epithelium so characteristic of that disease, as well as by the history of the case.

Oriental Sores must be regarded as the manifestations of peculiar varieties of malaria. They enjoy a number of local names, *e.g.* Delhi boil, Frontier or Lahore sores, etc. They begin as dusky red subcutaneous swellings, which continue increasing in size until they break down and become most intractable ulcers requiring change of climate and months of treatment to heal them. Liq. ferri pernitratis

fortior is almost a specific in their treatment; but it is often necessary to chloroform the patient and scrape them out from the bottom with a Volkmann's spoon, and then to apply nitric acid, zinc chloride, or other strong caustic. This may have to be repeated several times at intervals of a few weeks before they will heal properly. At the same time, the general health must be attended to, and iron, quinine, and arsenic given internally for a month or two.

Malarial Anæmia, or Tropical Cachexia, affects mostly residents in the damper parts of India, where the cold season is either very short, or is only nominally and euphemistically so-called. It is due to the perversion of nutrition consequent on the chronic congestive changes of the internal organs and intestinal catarrh described above.

Treatment.—About three years' residence in a good climate with three annual courses of Carlsbad will remove it in young and healthy subjects. In the weak, debilitated, or aged, it is frequently incurable. It is often associated with considerable bodily and mental activity. Many retired officers, who have for several decades been drawing handsome pensions, may be seen in London Clubs, Cheltenham, Bedford, and elsewhere, with ghastly anæmic faces, marking them as the subjects of tropical anæmia, but apparently enjoying life in the sad and sober manner for which we Anglo-Indians are so famous, just the same as before. (See Treatment of Constitutional Malaria, p. 147.)

Malarial Rheumatism.—There is a form of muscular rheumatism occurring in the tropics which gets

well on simply giving moderate doses of quinine and salines for a few days.

The ordinary form of muscular rheumatism is very prevalent in the damper and more malarial parts of India, such as Lower Bengal, Assam, and Burmah. This form is most amenable to Carlsbad treatment, a few days of which often banishes it. The course should, however, at the earliest opportunity, be *carried out fully*, in order to get rid of the tendency of the constitution to produce these rheumatic attacks. It should be supplemented, too, by hot salt electric baths with local faradization over the liver for from five to ten minutes daily. Iodine liniment should be painted over the affected muscles and over the liver. Sweets, sugar, greasy dishes, acids, and fresh fruits, should be rigidly avoided. Flannel should be worn next the skin, and care taken to avoid chills and draughts. Massage of the affected muscles and of the entire body is often extremely beneficial. The rubbing should be conducted in a centripetal (or towards the heart) direction, as otherwise it will do no good.

Muscular rheumatic pains can also, of course, be relieved by giving antipyrin, exalgin, and other analgesics. I must strongly condemn this practice save as a most temporary measure for the relief of severe pain. It is purely symptom-treating—that great curse of modern medicine. Our object should be to search out causes and remove them, and not to simply palliate results, leaving causes untouched.

There is a very grave form of rheumatism seen in broken-down constitutions characterized by muscular pains with low adynamic symptoms. These cases rapidly sink, in spite of all treatment, and die; the

affected muscles, when examined after death, are found occupied by dark inspissated extravasations of blood into their substance, and the heart is found to contain ante-mortem clots. Beyond these there are no other distinct changes.

A form of acute articular rheumatism proving rapidly fatal (in about two days) often attacks chronic drunkards.

Rheumatic symptoms, either of the acute or chronic, muscular or articular types, in broken-down constitutions, and more especially in the intemperate, should always be regarded as of the gravest significance, and the probability of an early fatal issue communicated to the patient's friends. After some experience of cases of this kind, their recognition becomes easy, and an indefinable prescience warns the physician of their approaching end.

Remittent rheumatic attacks with effusions into the joints, when they occur in young persons of temperate habits, are also amenable to Carlsbad.

Case IIIa.— ——, compounder, was regularly absent from duty for three or four consecutive days in every fortnight, owing to rheumatic effusions into one of his knee-joints. On the third or fourth day he could always limp back to work again. He was a young, married, anæmic man, with large, deep, dark circles round his eyes, such as are often present in functional liver cases. He had never had any venereal affection. He was put through a course of Carlsbad, and had no attack for six months afterwards. Then, feeling slight pain returning, he went through a second course. An annual course will probably keep him free of the disease for years. I need hardly add that he has become an eager apostle of Carlsbad and its virtues.

Malarial Paralysis. — Severe or long-continued

malarial fevers often produce symptoms of paralysis or paresis of the lower limbs. This in one case in which an autopsy was obtained was found due to **spinal pachymeningitis.** There were no signs of previous syphilitic disease in any other part of this patient's body, and from the frequency of the occurrence of paretic symptoms in malarial cases, I conclude that thickening of the meninges of the cord, is not an infrequent result of severe malarial fevers. It also occurs after tropical typhoid fever.

Manson ("Tropical Diseases," p. 229. Cassell & Co., London, 1898) doubts the existence of malarial paralysis—thinks the cases so called are beri-beri, and says that he himself, before he had much experience, also diagnosed these cases as malarial.

It is with the greatest diffidence that I venture in any way to differ with one who has proved himself a master of the scientific investigation of tropical disease, and who has himself the clinical faculty so highly developed.

His observations were, however, made on the damp, warm Chinese littoral—mine in the plains of the Punjab, a climate so dry that one's clothes and bedding sparkled and crackled with electricity at almost every movement, and where the fiercest of summer heat was followed by a very cold winter. In this province there was little beri-beri—its rarity was remarkable.

At one time I had eight cases of what I believe to be malarial paralysis, or paresis, under observation together at the Umbala Civil Hospital. These cases all gave the same history of the paretic symptoms supervening during a severe attack of fever. None

of these cases ever recovered completely, nor did they get any worse. Had they been beri-beri cases they would either have recovered or grown worse. During the past seventeen years I have made similar observations on many such cases. I also attended a Hindu girl, of good social position, aged thirteen, suffering from *compression myelitis*,* which was observed after an attack of malignant malarial fever.

If the malignant malarial parasite can cause coma by blocking the cerebral capillaries, why could not a compression myelitis, or a thrombus sufficient to interrupt motor impulses passing along the cord, result from their blocking the capillaries in the substance of either the cord or meninges? The fact that these cases do not recover rather supports this view. I have treated many of these cases in their own houses. There also they do not improve, and neither do they get worse or die. If they were beri-beri cases they would get worse or die in their own homes—*beri-beri being a place infection.*

Rheumatic thickening of the spinal dura mater may also occur, as I think the following case shows.

Case IIIb.—Miss ——, a pale, anæmic, delicate girl of sixteen paraplegic, and confined to bed for six months past. Control of sphincters was intact. Ankle clonos, front tap and exaggerated knee-jerk present in both legs. Rheumatic swellings on the back of both wrists. History of partial previous paretic attacks from which she had recovered. There were no ophthalmoscopic signs of disease. No hysteria. Diagnosis: rheumatic spinal pachymeningitis. Treatment: a mild course of Carlsbad, followed by iodides of iron and potassium, and

* Reported in the writer's paper on the "Macro-pathology of Constitutional Malaria," read at the First Indian Medical Congress, Calcutta, 1894. See "Transactions" of same.

alkalies, hot salt baths, and liniment of iodine daily over the cord. In two months she got up and began to go about on crutches, and has since been slowly improving.

Cerebro-spinal meningitis often occurs in epidemic form amongst natives.

On the Indian littoral, care should be taken not to confound any nervous malarial symptoms with beri-beri.

Scurvy very readily attacks the subjects of malaria. It occurs most commonly in natives, during the most malarial part of the hot weather, *i.e.* the rainy season. The disease seldom develops fully ; only the incipient stages are observed.

Europeans are, however, not exempt. An officer from a malarial frontier district, who had been shooting in a part of Kashmir where he could get neither fruit nor vegetables, returned covered with large scorbutic ulcers, spots, and subcutaneous ecchymoses resembling huge bruises. He ate the same food as the coolies who accompanied him, but they, living in the highlands of Kashmir, were free from malaria, and developed no scurvy.

The tendency to scurvy is manifested in the dusky hue, swelling, and congestion of the gums, which readily bleed on pressure. Such cases should have their quinine dissolved in lime-juice, and should get rid of their scorbutic troubles before starting Carlsbad treatment.

A General Catarrh of the Mucous Membranes is stated on p. 121 to be one of the **results of** prolonged **exposure to malarial influences.** This result is also contributed to by residence in a hot climate.

Tropical catarrh of the stomach and intestines has

already been discussed (p. 125), and the heavily loaded *tropical tongue* noted as a sign of the same. This catarrh affects the entire intestinal tract—extending even up the biliary ducts.

From the pharynx it extends up through the Eustachian tube, producing catarrh of the middle ear. There it may cause suppuration, perforation of the drum, and a chronic purulent discharge, or it may take the form of plastic inflammation glueing the ossicles of hearing together, and causing partial deafness. Most ear troubles originate in the throat as ordinary catarrhs—hence the excellent term **throat deafness**. This mode of origin is in no way peculiar to the tropics, but is of more frequent occurrence there than in temperate climates.

The form of **nasal catarrh**, accompanied by increased growth of vascular tissue over the lower **turbinated bones**, is very common in the tropics. If not treated and checked, at least partially, it is certain to lead to more or less deafness. For several years past the usual linear cauterizations with the galvano-cautery have, in my practice, yielded good results. The resulting cicatricial contraction controlled the tendency to unusual or exuberant growth, and relief resulted—though I cannot say that a complete cure always ensues.

The throat in the tropics is often the seat of persistent catarrh and relaxation. It may be cauterized similarly with the galvano-cautery with great subsequent relief to the symptoms. Patients should be warned not to swallow the strong cocaine solution (20 per cent.) under which these operations are painlessly performed. It may excite fainting in

those whose circulation is weak. All tropical practitioners would find it advisable to keep a Schall's (Wigmore Street, London) cautery battery, a set of platinum-iridium burners, and Schech's handle for these operations.

Enlarged tonsils often result from chronic throat catarrh. In the adult they had better be excised. They are apt to foul the breath, contaminate the food and stomach, and to lead to deafness. The new method of puncturing the tonsils aims at being an improvement on excision. It is not so certain, and is certainly more tedious. In children it is better to paint the tonsils with a mixture of tincture of iodine one part, and glycerine four parts, daily for about two months. This often suffices to reduce them. A foul ozœna often keeps children's stomachs out of order, or maintains a diarrhœa until the constitution is quite exhausted. It is impossible to prevent the foul discharge being swallowed in these cases, and the course I advise being followed is to wash out the nose with plain water in a nasal douche, and then, under chloroform, apply strong silver nitrate solution (40 grains to ℥j). Search should also be made for dead or denuded bone in the nasal cavities.

An excellent rule in these cases is: *when a patient comes complaining of ear trouble, to look first at the throat; if of throat trouble, first examine the nose.* Thus the primary and the causative lesson may, in each case, be discovered at once.

The uterine congestion which we saw (p. 126) malaria caused, is accompanied by a catarrhal endometritis. This gives rise to menorrhagia and

other uterine troubles. Uterine displacements are especially frequent in the tropics. They are due to the increased weight of the malarially congested organ, and also to the imprudence with which women indulge in exercise—riding, dancing, etc.—during the menstrual periods. All these troubles originate as catarrhal endometritis.

The **general anæmia malaria causes** is sufficiently explained by the destruction of the red blood corpuscles under the action of the *plasmodium malariæ*. This anæmia causes a general malnutrition and atrophy of the digestive organs, heart, and lungs.

This intestinal wasting is also conduced to by the patches of arborescent congestion which so often appear on the intestinal mucous membrane of sufferers from constitutional malaria. These patches are generally found near the lower end of the ileum, and are of variable size and extent. They are intensely congested, and the individual vessels are in many places distinctly visible—the colour a vivid red, and the epithelium more or less abraded. These patches become, after a time, more or less quiescent, anæmic, atrophied, and darkly pigmented. They are most usually found in the pigmented stage. During life they give rise to much local pain, tenderness, and diarrhœa. They are apt to become affected also with the more chronic forms of dysenteric ulceration, or chronic diarrhœa may supervene. In some cases I have seen the inflammation attending this arborescent congestion extend through the substance of the bowel wall, and cause a true **catarrhal enteritis.***

The affections of the mucous membrane of the

* This diagnosis was made at the autopsy.

genito-urinary tract, prevalent in the tropics, have not yet, so far as I am aware, been studied.

The **increased production of uric acid** in the systems of patients suffering from **constitutional malaria** is a point to which little attention has been given. Reflection will show that as malaria impairs all the digestive functions and processes, it is natural that the metabolic functions of the liver should suffer in the general disorganization. The nitrogenous food we eat is utilized in the body, and excreted again in the form of urea, after undergoing most complex chemical changes. When these changes are imperfectly carried out, the nitrogenous matter appears in the urine as uric acid, and not as urea. Constitutional malaria has the effect of persistently increasing the production of uric acid in the system. **To this** effect, in my opinion, **is due the great prevalence of renal gravel, renal calculi, and stone in the bladder* in India.** In those parts of India where the rainfall is excessive, and soft rain-water drunk, the diluent effect of the latter dissolves out the uric acid and frees the system from it. But where the climate is dry, where the skin acts freely, and the urine is constantly passed in a state of great concentration; where, in addition, the rainfall is scanty, and the drinking-water is a hard water obtained from deep wells, rich in lime and chlorides†—as all the water of Upper India, the

* It must be understood that I do not by any means wholly ascribe the great prevalence of stone in the bladder in India to this cause alone. I, however, think it a most important adjuvant factor, previously rather overlooked.

† All Punjab well waters are rich in lime, and generally in chlorides also. This I learnt from seven years' experience as Government Analyst for the Punjab.

Punjab, and Rajputana is—there stone in the bladder and calculous affections are prevalent.

This opinion is supported by its accordance with chemical and scientific facts, clinical experience, and it is corroborated by the enormous mass of statistics on the occurrence of calculous disease, collected by the Government of India during the past fifty years.

Parkes was, I believe, the first to observe, nearly forty years ago, that in cases of enlarged spleen the amount of uric acid excreted, or found in the blood, was enormously increased. We now know that this is so in almost all anæmic cases.

The following facts met with during the course of ordinary official work led me independently to the above opinion :—

The Ghaggar Valley, situated at the foot of the Himalayas, is one of the most malarious tracts in India. Major Dyson, F.R.C.S., of the Indian Medical Service, Sanitary Commissioner, Bengal, found during the course of an official inquiry into the cause of the rapid depopulation of this area, that in many of the villages the ratio of cases of enlarged spleen (spleen ratio) was over 50 per cent. Date palms are good indicators of subsoil waterlogging. They are ubiquitous throughout the valley. In some of the villages I found the depth of the water in the wells to be only three or four feet from the ground level. The Ghaggar River never joins any other river, nor does it ever reach the sea. Its waters are lost in the sands of the Bikaneer Desert. This means waterlogging all along its course. Waterlogged country is simply a breeding-ground for malaria.

As Civil Surgeon of the Umbala District, in which

the Ghaggar Valley is situated, I had at the Civil Hospital, daily opportunities of observing the profound malarial saturation of the patients coming from this locality. The adjacent valley of the Sarasati—one of the most sacred of Hindu rivers—is equally waterlogged and malarious. The higher-lying non-irrigated intermediate tracts between these valleys, on which Umbala itself is situated, are amongst the healthiest in India. In Umbala the depth of wells is often nearly 200 feet.

From both these valleys, patients constantly came to the Civil Hospital, suffering from renal gravel or stone in the kidney. Out of a total population of 1,065,000 in the Umbala district, these two comparatively thinly peopled valleys furnished almost all the cases of renal gravel and of renal and vesical calculi. All these calculous patients were the subjects of more or less constitutional malaria, and generally had enlarged spleens. Many were so profoundly affected by it that I was obliged to refuse to operate upon them. To do so would have meant, for them, certain death.*

* In the tropics, where scientific surgery of precision is displacing empirical native systems of medicine, it is a great mistake to ever risk losing a case. One fatal case, or even one case in which the surgical result has been unsatisfactory, deters fully twenty good cases from coming into hospital for operation. The most rigid selection of suitable cases for operation must be regarded as a most essential portion of the "white man's burden."

This refusal to operate in unsuitable cases is, however, one of the saddest duties falling to the lot of an Indian civil surgeon. The appealing regard in the large melancholy Oriental eyes, the patient look of ox-like endurance of suffering in the weary sun-hardened face, the pathetic trust and confidence in the white surgeon's skill, the unquestioning acceptance of an evil fate as the blind decree of an overruling destiny—these, as seen in the fine Punjabi agriculturist (ryot)

On some of the younger cases who appeared to have the strength and vitality necessary to undergo such a severe operation, I performed nephro-lithotomy. Mainly owing to careful selection, the mortality in these cases did not exceed 25 per cent. Subsequent courses of Carlsbad treatment gave these cases much relief, and kept them from further attacks of gravel or stone. But it was found impossible to ever restore them to perfect health again, owing to the hold constitutional malaria had on them.

Treatment of Constitutional Malaria.—The first step in all cases is, if possible, to get the patient away from the malarial district to a warm, dry, equable locality. Cold is bad for these cases—they cannot stand it. It lowers their vitality, and they are very liable to develop pneumonia or fresh attacks of intermittent fever if exposed to it or any lowering influences. These patients are apt to suffer from extreme mental depression, which impairs their chance of recovery. To prevent this it is best to occupy their minds with light work if they are able for any. If not, amusements and pleasant light reading must be provided. If the patient has no home or friends to go to, he should not be allowed to hide away in miserable solitude in city lodgings, but should be sent to a bright, cheery "hydro," or sanatorium, where he would have some human sympathy and companionship to cheer him up.

of the good old school, appeal to all our deepest sympathies. If told in a kindly sympathetic way that their destiny has gone wrong (*takdheer phoot gya*), and advised to solace physical and mental pain with a small daily dose of opium—these poor fellows go away to their homes, apparently resigned to their hard fate. All are most implicit fatalists,

These cases had better avoid the cold grey shores of Britain in winter. The cold, damp, and want of sunlight are most injurious for them. From India in winter they had better go to Melbourne, Auckland, the Riviera, or Algiers. The difficulty always is, that in the climate suitable for them, they probably have no friends or relatives to visit and cheer them.

Unless accompanied by a friend or relative in his search for health, warmth, and sunlight abroad, the tropical invalid generally gets homesick, and returns to Britain to relatives or friends. After fifteen to thirty years in the tropics there may be few relatives surviving, and the returned and invalided exile's fate is then indeed hard. For such cases—and there are a great many such—I wonder no place has been provided by the philanthropically disposed. I would suggest a sort of sanatorium in the warmest corner of England—Cornwall from choice—where board and lodging would not exceed two guineas a week, where accommodation could be provided for married couples and an infirmary for the more serious cases. Tropical patients, grouped together in a "home" of this kind, would have the companionship, the comforts, and attendance essential to their well-being, and would not be forced, as they now are, to hide away and die, neglected and forgotten, in cheap obscure country places. A retired medical officer or two could be got to take charge of it, and many officers' widows would be glad to act as matrons and nurses. If wealthy members of the services who have no families would, for the space of five years even, bequeath their estates to establish such a much-wanted and deserving institution, the project could be easily carried out,

and would brighten the lot of many a poor tropical invalid.

Constitutional malaria sometimes so profoundly saturates the system that it cannot be got rid of. The slighter cases can, however, after a full three years or less in a good climate, get rid of most of their symptoms. It is a curious thing, however, how the fever germ may linger latent in the system for years and reappear under the influence of cold, or anything which lowers the vitality. Under the age of forty it is more easily shaken off. No one is ever quite the same in health, after suffering from constitutional malaria. *La blessure guérit mais la marque reste.*

A mild course of Carlsbad treatment, as given for gastro-intestinal catarrh, mitigates the severity of the symptoms of this affection slowly and gradually. Rapid results cannot be attained, and must not be looked for. After the tongue has been cleared under the action of Carlsbad, and the catarrhal symptoms and congestions of the internal organs abated, a tonic treatment with quinine and iron may be ventured on. The doses of both must be very small, or the catarrhal stomach will not tolerate them. The following pill with meals is usually borne: ℞ Ferri et quiniæ citratis gr. j, quiniæ hydrochlor. gr. j, aloes soc. gr. $\frac{1}{8}$, pil. rhei co. gr. iij M.* One of these twice daily with

* The dry, hard, ready-made pills should be avoided ; they seldom dissolve in the stomach. The pills here recommended should be made up very soft, with a little glycerine added to keep them moist in dry weather.

Should iron, given in this form, not agree, try Robin's Peptonate de Fer (obtainable from Jozeau, French Chemist, Haymarket, London). It is a very mild preparation, non-astringent, and I have never seen it disagree.

food should suffice. Hot baths or hot salt baths every night going to bed relieve the internal congestions. Warm clothing—pure woollen underwear—as much outdoor life and exposure to mild or diffuse sunlight as possible, plain nourishing food without acids, sauces, or spices, four times daily, and plenty of fruit, are all recommended.

Electricity applied over the liver, spleen, and abdomen is useful also in restoring tone to the enfeebled and exhausted blood-vessels of these organs. It must be remembered that a tropical patient somewhat resembles an animal in which the splanchnics have been divided. He has a more or less general paralysis of the vaso-motor system of his chylopoietic viscera. For this condition a warm, tightly applied cummerband, or waist-belt, is useful, as well as the nightly application of the induced current of electricity.

After two or three years' residence in a temperate climate the symptoms imperceptibly fade away and disappear. These patients generally remain more or less anæmic, and are susceptible to cold and chills, but on the whole enjoy a fairly comfortable life on recovery. Yachting, in the warm weather, is a good amusement for them. They should live abstemious lives, in the matter both of food and drink. They must remember that in enduring hardship, exposure, or prolonged hard work, they are not likely to be able, successfully, to compete with those who have not suffered from constitutional malaria.

II.—Dysentery.

Chronic dysentery—Catarrhal and ulcerated—Alkaline saline diagnostic test for ulceration—Chronic

dysentery a purely local disease of colon—Colotomy proposed as a cure—Treatment by drugs generally useless—Cæcal dysenteries most dangerous and intractable; the sigmoid cases recover oftenest—Many cæcal cases due to appendicitis—Treatment: rest in bed; milk diet—Special directions about milk diet—Injections into bowel—Diet for incurable cases—Prevalent ignorance on the subject—Vichy and Carlsbad treatment—Hot Baths.

Dysentery occurs in two forms—**acute** and **chronic.** Only the very mildest catarrhal forms of the acute affection in which there is no ulceration of the bowel can be treated by Carlsbad.

Chronic dysentery usually results from, and remains after, a previous acute attack. It may, however, supervene without any previous acute attack. These insidious cases are the most difficult to treat. Dysentery is distinguished from diarrhœa by the presence in the motions of slimy, mucoid, or gelatinous matter, which may or may not be mixed with blood.

It is a most distressing affection, rapidly weakening and reducing the patient to a state of extreme emaciation, from which, under our English methods of treatment, very few recoveries ensue.

The essential feature of most cases of chronic dysentery is persistent ulceration of the colon. These ulcers erode, undermine, and infect the colic mucous membrane, its lymphatics, and their glands. The bowel being always in motion, they never get the rest necessary to enable them to heal up. They may persist for months or years improving and relapsing, undermining the general health, in some cases

producing abscess of the liver by convection of septic matter or amœbæ, in others causing a chronic fatty degeneration and atrophy of the liver. This latter affection seems, in some cases, to go through a preliminary stage of true cirrhosis, and in the light of Professor Adami's (Montreal) recent researches (as given in the *British Medical Journal* for October 22nd, 1898, pp. 1215–18) on the Pictou cattle disease —a form of progressive cirrhosis of the liver, caused, apparently, by the irritation of microbes, which have travelled from the colon to the liver—this seems a highly probable course.

There is a milder variety of chronic dysentery, in which there are marked gastro-intestinal catarrh, chronic congestion of the liver, and a *mucoid degeneration* of the colic *epithelial cells.* Usually there is no ulceration present. This variety, known as the **catarrhal,** is most amenable to Carlsbad and Vichy treatment.

For the ulcerated varieties of chronic dysentery both Carlsbad and Vichy are contra-indicated. They both irritate and produce abdominal pain and tenderness.

It is most important to know early in the treatment of a case whether there is ulceration present or not, as a knowledge of this determines the line of treatment to be adopted. An initial mistake in the treatment of a case of chronic dysentery is a most serious matter, as it may mean a lifelong invalidism for the patient.

A case of catarrhal dysentery may often be allowed to remain up, and have carriage exercise. An ulcerated case should, however, be kept rigidly in

bed and on mild diet for three to five months, in order to, as much as possible, rest the bowel from work and put it in the best position for healing and cure.

Up to the present no test, so far as I know, is in use by which the presence or absence of ulceration can be determined. We rely on the amount of abdominal pain and tenderness, on the state of the tongue,* the amount of the diarrhœa, and on the presence or absence in the motions of blood. All these tests are deceptive. *There may be extensive ulceration without any diarrhœa or* without any *blood in the motions.* In many cases where the *ulcers are high up in the cœcum there is obstinate constipation.*

Alkaline Saline Diagnostic Test for Ulceration.—Hence with all cases it is advisable to begin with very small 3-ounce doses of Carlsbad or Vichy, given thrice every morning. If any ulceration is present, in four or five days, or less, persistent pain, tenderness localized over the ulcerated places, general abdominal malaise, and slight diarrhœa will develop.† This enables us to determine that ulceration is present, and also in what part of the bowel it is situated. If none of these symptoms arise, you are safe in assuming that you have a catarrhal case of dysentery to deal with, and can continue the mild Carlsbad, or, better still, Vichy, course, with absolute milk diet, in small quantities of 4 ounces, every hour. (See p. 159.)

The pathology of chronic dysentery is still in an

* Where the ulceration is extensive the tongue remains dry, hard, red, and glazed.

† So far as I am aware, this method of diagnosis has not been described or applied by any one else.

unsettled state. There are a *number of different affections included under the term "chronic dysentery."* The amœba coli is credited with the production of some of these. Its presence in the pus of liver abscesses lends colour to this idea. Further researches, however, tend to establish that its presence is rather accidental than causative. Celli and Fiocca assert that the disease is due to the colon bacillus, which assumes pathogenic characters under certain circumstances, of which one is an abraded or devitalized condition of the epithelium lining the bowel.* Lastly come the researches of Adami, showing the migration of microbes from the colon to the liver, where they originate cirrhosis—important in showing how the liver suffers in connection with chronic dysentery. Hale White considers chronic dysentery a **purely local affection of the colon,** and reports a case of four and a half years' standing cured by pure milk diet and rest in bed for five months (*Lancet*, July 6th, 1895). He further advocates **colotomy to completely rest the bowel** where milk diet alone has not sufficient effect. In some cases, where the colon alone is affected, colotomy would have, I have no doubt, a curative effect. The selection of suitable cases for operation would, however, be attended with great difficulties and uncertainties. The *line along which modern treatment of chronic dysentery is now advancing is the abandonment of drugging and the substitution of mechanical and physiological rest for the bowel.* It

* This accords with the "Law of Wissakovitsch," which states that a woman's immunity from puerperal septic infection depends on the integrity of the epithelium lining the purturient passages (Kelly's "Operative Gynecology," 1898).

remains to be seen whether in the near future a few cases treated by colotomy successfully, may not give these ideas, new impetus. Golding Bird and Hale White have already treated some cases of membranous colitis by colotomy. (*See Appendix.*)

The prospects of cure of a case of chronic dysentery —always rather discouraging—grow more so as the seat of the disease recedes up the bowel. The **most intractable and incurable cases are those in which the cæcum and ileo-cæcal orifice are affected. Both these become affected as the result of a mild or sub-acute appendicitis,** in a large number of cases. This mode of origin seems not to be generally recognized. These parts of the bowel are occupied by liquid contents, which have to be propelled upward against gravitation. This and the passage of the ileo-cæcal orifice by the intestinal contents entail greater motions of this part of the bowel. Dysenteries situated high up in the intestine infect the parts of the bowel below them, and are themselves less easily reached by astringent and other injections. These points serve to show why these cæcal dysenteries are so rarely cured.

Those of the sigmoid flexure are more easily reached by injections, are less subjected to movement, and in consequence more frequently and readily heal up.*

* A Mexican remedy of great repute for chronic dysentery is mentioned by West in Loomis and Thompson's "American System of Medicine" (1897). It is a bitter and powerful astringent and tonic named *Chapparro Amargoso*, obtainable from Parke, Davis & Co.

A similar South African remedy, *Monsonia ovata*, obtainable from Ferris & Co., Bristol, is strongly recommended by Maberly (*Lancet*, Feb. 6th and 13th, 1897).

Both these remedies will be found useful in catarrhal cases; but

Cure, in all cases, is a very slow and tedious process. In some it may take as long as three years. As the ordinary duration of many attacks of amœboid dysentery is three months, it seems desirable, in some cases at least, to limit the term "chronic dysentery" to cases which have been ill for four or five months. *The saline test for ulceration* described above (p. 153), *does not give certain indications until after this period has been passed.*

Treatment.—Mild courses of Carlsbad or Vichy treatment are very efficacious in catarrhal cases, but in ulcerated cases simply produce irritation and harm instead of benefit. The water should be given tepid in 3-ounce doses, once, twice, or thrice every morning, according to the patient's strength and condition.

All patients should be put to bed, and kept there so long as there is any pain or tenderness on pressure in the abdomen. No other food than plain milk in doses of 4 *ounces every hour for sixteen hours daily is allowed.* If this constipates, add to each dose one or two teaspoonfuls of cream. Keep up this treatment for from three to five months, or until all abdominal pain and tenderness has quite disappeared for some time. Then only gradually permit a return to farinaceous food. Let it be given for three weeks before allowing the patient out of bed. After he gets up and out allow only carriage exercise or yachting for several months, and give the simplest diet possible. Hale White allows five oysters daily with the milk. If they produce intestinal catarrh they must be stopped.

from trial I am inclined to think them powerless to more than temporarily benefit ulcerated cases.

This restricted diet does not, however, answer with all. Some are so run down by the disease that when put on this dietary and confined to bed they develop boils, whitlows, and abscesses. Such cases should in winter * have a bedroom adjoining a greenhouse or conservatory, into which their beds can be wheeled daily into the sun and light. Their milk must be supplemented by a few sandwiches of raw meat between unbuttered bread, and they should have fifteen drops of Robin's peptonate of iron thrice daily.

It is best for chronic dysenterics not to winter in England if they can avoid it. If they must, let them go to Falmouth or some other warm south-coast winter resort. On the Continent it is difficult to get the food, accommodation, or attendance a chronic dysenteric needs, and it entails great expense as well as separation from home and friends. It, however, gives that sun and mildness which England has not enough of in winter. The nearest approaches to the Riviera in England are the mild Cornish climates of Falmouth, Penzance, and New Quay. Falmouth is by far the warmest and sunniest spot in Britain in winter.

Milk diet is selected as being a natural food and the only one a patient will be able to tolerate for such a long period, to the exclusion of all others. It reduces intestinal decomposition and the growth of bacteria in a most striking way, as shown below.

* In summer they should be carried out into the open air—when the weather admits—in light stretcher beds, and allowed to stay out most of the day. Bedroom windows should be open day and night, both in summer and winter.

Normally one milligram of fæces contains 67,000 germs. These are reduced to—

14,000	per	milligram	after the	1st	day of milk diet.
5,000	„	„	2nd	„	„
2,550	„	„	5th	„	„

The weight of the fæcal bolus falls from 175 grammes to 73 grammes.*

These figures conclusively show the powerful effect milk diet has in reducing intestinal decomposition. This effect is due in great part to the acidity of cows' milk. Milk, however, has the great defect of leaving a large amount of insoluble residue (casein) which no human stomach can digest. If this could be eliminated it would be a theoretically and practically perfect food. For confirmed chronic dysenterics the milk must not be peptonized with zymine powders. The alkali in these irritates and produces diarrhœa in the same way that Vichy water does.

To secure the full beneficial effect of the milk diet, the *restriction to milk must be absolute.* Sugary and starchy infants' or invalids' foods must be carefully avoided—especially the sugary. They simply feed up the germs in the intestines, and produce a miniature gas-factory inside them, from decomposition. This intestinal decomposition is accompanied by the formation of acrid products which irritate the intestine and prevent the ulcers healing. Manson's

* Gilbert et Dominici, "Les microbes de l'intestin et le régime lactée" (Societé de Biologie, Mars 1894). "Bactères Pathogènes," par P. Dufloc (Paris, Masson et Cie, 1897). "Le régime lactée, son influence sur l'asepsie des voies digestives."

account of dysentery in his "Tropical Diseases" * should be studied by all. It is the best yet written.

Manson directs that food is to be given in small quantities frequently repeated, and neither too hot nor too cold. This is a most useful rule. Large quantities of fluid either too cold or too hot lead to increased movements of the bowels. Sir Joseph Fayrer, Bart., on this account directs all his cases to take only 4 ounces of milk every hour, whilst awake. This gives about 64 ounces of milk per diem, and if this is supplemented by a couple of teaspoonfuls of cream in every glass of milk, it will usually be found enough. If not enough, the patient is liable to get very low, depressed, and hysterical from pure weakness—the result of starvation. In this case give 5 ounces of milk each hour or raw meat sandwiches. Great care should be exercised in guarding against milk from tuberculous cows. For long-continued use the milk cannot be sterilized, as the patient will probably become scorbutic if it is. Sterilization destroys the anti-scorbutic property of milk.

Injections into the Bowels.—As the disease is more or less a local affection, these form an important item in the treatment. They should not be used as long as there are any active or inflammatory symptoms present. To be of any use they must be large in bulk (two to four pints), given warm, allowed to flow in *quietly* by gravitation from an irrigator whilst patient is lying down.

℥i quinine hydro-chlorate in three pints of warm water is the best injection for amœbic cases. It kills

* "Tropical Diseases," by P. Manson, M.D. Cassell & Co., London, 1898.

the amœba (Osler). It is painless and unirritating. Potassic permanganate I have found useful, and astringent, given very weak (about 1 in 10,000).

Glycerinum acidi tannici, B.P., ʒ ss to three pints water is very efficacious, and is a good substitute for giving astringents by the mouth. The natural Vichy water, warmed, is also to be recommended. Solution of per-oxide of hydrogen has also been proposed as an injection. In many cases it will be found sufficient to use these injections every second day, as to do so daily often excites undue irritation.

For catarrhal cases, silver nitrate solution, in a strength varying from ¼ grain to 1 grain per ounce, is one of the most valuable of all remedies. If it irritates too much, or causes great pain and tenesmus, a few ounces of 4 per cent. solution of cocain must be first introduced, and again allowed to flow out, in order to anæsthetize the parts. For ulcerated cases, however, silver nitrate is usually found to be much too irritating to be borne, and the great tenesmus it excites injures instead of benefits.

Every effort should be made to retain the injection as long in the bowel as possible. This is difficult, as the bowel is usually so irritable it resents the presence of any foreign fluid, and promptly expels it. The patient should lie on his face, and turn on the right side, so as to, if possible, allow the fluid to get as far up as the cæcum.

When *a case has reached the confirmed chronic stage*, it is still *advisable to wash out the bowel two or three times a week*. This prevents accumulations, removes mucus, and, what is most important of all, *washes out* a crowd of *micro-organisms which might* (*according to*

Adami) *migrate into the liver*, and there, by the irritation they excite, cause those changes which result in abscess, cirrhosis, and fatty degeneration. This is important to bear in mind, as, so far as I know, it is a possible contingency to which attention has not hitherto been directed.

Full-length **hot baths** (100° F., 37·8° C.) of twenty minutes' duration relieve dysenteric pain, purging and tenesmus in the most marked manner, and should form a part of the routine treatment of this disease. They are said, by the Vichy physicians, to limit the intestinal ulceration—a statement rather difficult of proof. Any one who tries, can convince himself, however, that these baths relieve the symptoms of chronic dysentery and of some forms of diarrhœa. The relief is greater if carbonate of soda, in the proportion of one ounce to every four gallons of water, is added to the bath. The alkali emulsifies cutaneous oily secretions, gets nearer the cutaneous nerve terminals, and so produces a more powerful effect both upon them and on the circulation. These baths may be given daily if the patient is strong enough. The soda should not be added to a bath with a painted interior, as it will remove the paint.

Chronic dysentery is a disease about which—even in the tropics—very little is known. Its treatment is little understood, and is not touched upon in any of the standard medical text books. Neither is its extreme gravity realized sufficiently early to be of use. The great difficulty is to get the patient to *go to bed at once, and to stay there for months on milk diet.* He does not feel very seriously ill, is able to go about a little—thinks he has only a little diarrhœa,

that his doctor is an alarmist, and refuses both to go to bed and to submit to milk diet. The ulcers enlarge, deepen; disease fastens on him—becomes incurable. Hopeless invalidism for the remainder of a shortened existence is the penalty paid for these errors in judgment.

Even under the most careful treatment there are a large number of cases of chronic dysentery which never fully recover. These are for the most part persons of weakly constitution, who have usually some congenital digestive weakness or defect, and who are subject to chronic gastric and intestinal catarrhs. Some of these cases run on to a termination within a few years, or less; others linger on for many years as confirmed chronic cases—for ten, fifteen years, or longer. These protracted cases may have a fairly tolerable invalid existence on a carefully selected mixed diet of fish, fowl, game, tender mutton, soft vegetables, and fruit, milk puddings and bread; they should avoid sweets, coarse vegetables, and all kinds of food liable to irritate the bowel. Some may be able to tolerate only eggs and boiled bread and milk.* All should clothe warmly in pure wool, avoid all exertion, hard work, much travelling, and particularly cold, wet, or exposure. Alcohol is injurious for all, and apt to excite that peculiar form of inflam-

* One very sad case I know of, a retired officer in my own service, has had chronic dysentery for over ten years, and during all that time has been able to take no other food than boiled bread and milk. Two other cases, also of long standing, and themselves retired officers of the sister service (R.A.M.C.), can take hardly anything save eggs. One case takes six or eight eggs at each meal, and nothing else.

Infusion of the seeds of the Indian *plantago isphagula* (isphagul) is a soothing and often curative gelatinous and demulcent drink for these cases, and should be always given.

mation of the liver so prone to occur in these cases, and to result in abscess of that organ. A large number, both of acute and chronic cases of dysentery, end in liver abscess. This is often contributed to by an unsuitable climate, either too cold or too hot, as well as by unsuitable food and by alcohol.

There are a number of cases of chronic dysentery which suffer so little inconvenience from the disease that they are able to continue at duty. Several such cases are known to me in India in various departments of the Government Service. Such cases are, however, unable to sustain any hard work or exposure—they have a very feeble hold on life. This was sadly rendered evident in the recent case of a well-known general officer, who, though a chronic dysenteric for years, attempted to take command of a brigade on active service on the North-West Frontier of India. The cold, hardships, and exposure cost him his life.*

The fact that these cases can discharge their duties, but have to diet so carefully and avoid exposure, leads to many of them being regarded as hypochondriacs, not alone by the members of their own families, but by even their medical advisers. This simply arises from the profound ignorance of this disease, which prevails so extensively, not alone in temperate climates, but also in the tropics.

Many chronic cases, mainly amongst natives of India, gain relief from their pain, diarrhœa, and tenesmus solely by the use of opium.† For distressing

* On the other hand, I know many chronic dysenterics who can ride, "bike," and shoot a little. It is a great mistake for these cases, however, to ever ignore their own limitations. They very often pay for doing so with their lives.

† A native medical officer (Sikh) serving under me informed me

tenesmus (bearing-down pain) either a drachm of tincture of opium or 30 grains of antipyrin dissolved in 4 ounces of thin starch mucilage, given as an enema, secures immediate relief. The patient should be also made to lie down in bed and kept quiet. Liniment of iodine or turpentine should be applied daily over the liver and front of the abdomen until the skin becomes tender. A hydropathic belt is also of great use. Its object is to keep the skin continually irritated and tender for some weeks.* Should doing so excite fever, it must be at once stopped, and a soothing ointment applied. A warm flannel cummerband and woollen underclothing must be habitually worn. Chronic dysenterics would do best in a dry, warm climate like the interior of California or Australia. The lack of comforts and society in the latter, however, rather militate against it.

The return to ordinary diet from the rigid milk diet should be very slow and gradual. Begin with some boiled bread and milk. After fourteen days of this, give boiled milk and rice (known in India as *kheer*), sago, tapioca, but allow no sugar in any of these articles. Boiled fish like the turbot, or in India the *rohu*, may be next allowed. Then boiled chicken, and so on to tender mutton, etc. Manson allows apples stewed after being finely grated, or a soup made from potatoes finely grated—as antiscorbutics. I have found soft mealy apples (American) roasted in the oven, given with plain cream and no sugar, suit well. Patients should be careful to eat no pips

that he had suffered from chronic dysentery for twenty-one years, and was only able to keep at work by eating opium habitually. Used in this way, opium is a true "gift of God."

* See p. 181.

or core. Eggs beaten up in tea or coffee, cocoa and milk, Horlick's malted milk, and isinglass cream (ivory cream), are all agreeable variations to the monotonous dietary. Many patients can be allowed to suck the juice of one orange daily.

Many cases have depraved appetites, and insist on eating mutton-chops, ham, beef-steaks, and other injurious things, unless they are restrained. I have heard of a doctor even, who, when invalided home for chronic dysentery, insisted on continually eating mutton-chops on shipboard, until he made himself so ill he could do so no longer. The prohibition of alcoholic drinks should be carefully maintained. They and over-eating are most dangerous—exciting hepatitis and liver abscess. If a patient feels weak, give warm tea, soup, cocoa or coffee, or even some digitalis or ammonia.

Natives in India, take very kindly to milk diet—it accords with their own native systems both of religion and medicine. *Kheer* (rice boiled in milk until gelatinous) suits them well. They will very often insist on taking unleavened cakes of flour (*chupatties*) made with water, which are very heavy, indigestible, and apt to sour and irritate. The flour they use is also very coarse, full of not alone coarse branny particles, but often of dust, sand, and grit, all of which are very injurious. Therefore see that they have only rice and milk until convalescence is well established. The Hindus are very difficult to treat, as many castes will neither take eggs nor any kind of meat, and it is a very slow process building up strength on milk and rice.

For cases of *catarrhal* dysentery and diarrhœa

Vichy and Carlsbad are so efficacious, that no case should be given up or put to the expense of a journey to Europe, until these have been fully tried. Except in the most advanced and neglected cases, when the colon has become a stiff, hardened tube, and all further treatment, save palliative, is useless, good results may be expected.

A great future awaits the adoption of this treatment for catarrhal dysentery and chronic diarrhœa amongst British troops in India. These cases are now sent to England at enormous expense to the State in money and efficiency, whereas a few months in a hill climate beyond the reach of the monsoon climate * with Carlsbad treatment would quite cure them.

Amongst native troops, also, a large amount of invaliding could be avoided.

The French Government send their soldiers invalided from Algiers, Madagascar, and Cochin to the alkaline springs at Vichy,† where a large number recover. The Austrian Government send their soldiers who have contracted malaria and dysentery

* The monsoon or rainy hot-weather climate in India renders hill stations damp, moist, relaxing, *liverish*, and unsuitable for dysentery, diarrhœa, or liver cases, from 15th June until 15th September. What we want are a few stations for invalids about 150 to 200 miles further north, in the Himalayas, out of the reach of the current of damp monsoon weather, where the present defects would not prevail.

† Macpherson, in his "Baths and Wells of Europe," states that the French military medical authorities at the Vichy Hospital pronounce the Vichy water a specific for chronic dysentery, *where there is no grave lesion*. This statement is rather too confident, and is opposed to that of the elder Durand-Fardel in his "Lettres Medicales sur Vichy," where he distinctly states that Vichy is contra-indicated when any ulceration of the bowel is present. The Italian spring, Monte Catini, near Lucca, has a great reputation for dysentery. It is a pure saline.

Those who trust to mineral springs for the cure of any save catarrhal dysentery will find themselves very sadly deceived.

whilst serving along the Danube marshes and other malarial parts of Austria and Hungary to Carlsbad, where there is a large hospital and every comfort for them. The German and Italian Governments arrange for similar treatment of their malarial and dysenteric military patients at suitable mineral springs in their own territories. The Government of India would effect large savings if they established systems of Carlsbad treatment during the hot weather at various new hill depôts in Lahoul or Tibet, beyond the reach of the monsoon climate.

III.—Tropical Diarrhœa—Hill Diarrhœa—Irritative Diarrhœa.

Tropical white diarrhœa—Hill diarrhœa—Treatment of both varieties—Irritative diarrhœa, bacteriology of—Treatment—A very fatal disease of infants—Chronic gastric irritability of strumous children—Irritative spermatorrhœa of adolescents—Bilious diarrhœa.

Chronic Tropical Diarrhœa, or White Diarrhœa, Psilosis, or Sprue, is characterized by the occurrence of "numerous, pale, whitish, frothy, semi-fluid motions." These give little trouble at first, but gradually the patient grows weak and low, becomes paler and more and more anæmic. After the disease has lasted some months the tongue and gums begin to present a peculiar raw, red appearance, accompanied sometimes by actual ulceration or white aphthous spots. The tongue grows glazed, red, and tender. In advanced cases this is accompanied by a general thinning and atrophy of the coats of the intestines, which grow as translucent as a sheet of

paper. All the internal organs shrink and atrophy. The patient's eyes sink in, he grows more and more emaciated, and the face begins to assume that peculiar waxy look so suggestive of amyloid degenerations in the internal organs, and which is so often seen in cases of chronic tropical dysentery.

There is little, if any, pain or discomfort. This condition may continue for years until the patient's organs become permanently diseased, when recovery is impossible, and death ensues gradually from exhaustion or suddenly from pulmonary thrombosis.

Hill Diarrhœa seems to be a variety of the above affection, but differs from it in the fact that it ceases at or about 11 a.m. daily—a curious fact of which we have not yet found the explanation. This regular daily recurrence of diarrhœa between certain hours only, seems to me to be capable of but one explanation, viz. that it is due to the maturation, at those hours, of a colony of micro-organisms within the intestine. Their growth is attended by the production of gas and intestinal irritation, causing diarrhœa. It occurs, as the name implies, in the hills, at an elevation of over 5000 feet, and is most prevalent during the rainy season. Recovery generally ensues when the patient comes down to the plains for the cold weather. It is apparently a diarrhœa of semi-digested food, and presents all the characters of a gastro-intestinal catarrh—in other words, a form of indigestion of parasitic origin.

As Civil Surgeon of a hill station, my experience was that some incipient cases were stopped by Hewlett's mist. bismuthi* et pepsinæ co., others by

* An alkaline solution of bismuth and pepsine.

a few days of Carlsbad treatment, whilst some cases were totally unaffected by treatment. It affected most, those who were the subjects of "tropical cachexia," or anæmia, but even those who had only arrived from England a few months ago were not exempt. Many, whom I knew to be suffering from it, went about, danced, rode, and amused themselves, apparently little the worse for it. Finally, I came to the conclusion that the most valuable remedy was Carlsbad in the morning, *supplemented by small doses of 2 grs. hydrarg. cum creta midday and night*, and that in the cases where this failed the failure was due to the patient's continuing to indulge in a liberal diet of meat and all kinds of indigestible things instead of living on milk, as ordered. The Carlsbad acts by relieving the catarrhal condition of the intestinal tract, and by producing the flow of bile necessary to keep putrefactive changes in check. The small tonic doses of hydrarg. cum creta act as efficient intestinal antiseptics, and also produce a flow of bile. The only other precautions necessary are to give a wholly unirritating dietary of pure milk,* to guard against chills, over-exertion, and exposure. All other food save milk is to be rigidly prohibited.

Iodine liniment over the liver, hot salt-water baths and electricity over the liver are often very efficacious.

The white diarrhœa of the plains may almost invariably be taken as an indication that the patient needs a thorough change out of a malarial country. *Res angusta domi* in these times often renders a trip

* As in dysentery, give 4 ounces sterilized milk every hour. Let it be drunk slowly, not hastily gulped down.

to Europe totally impossible. The hills in the rains are not suitable for a case of long standing. I have, however, seen *recent* cases get well very rapidly in the hills. For cases of over a month's standing, unable to afford a trip to Europe, I would recommend a trip to Sydney by P. & O. It is cheap, a cooler voyage than that to England, and a complete change. If economy is an object, excellent accommodation can be had in country hotels or in city boarding-houses at from 25*s.* per week in any of the Colonies. The Carlsbad course can be most excellently carried out on the voyage, and the malarial patient can have the hot salt-water baths, which will prove of the greatest use to him. Neither acid nor iron should be given; both disagree. The diet should be pure sterilized milk.* When colour begins to return to the motions, and they cease to be semi-fluid, the diet may be cautiously increased. An egg beaten up in a cup of tea, a soft-boiled egg or a poached egg may be tentatively ventured upon, then chicken *purée*, white minced chicken, boiled fish, and so on. If the patient is not extremely low he is better without stimulants. Virol, a bone-marrow fat, may be given for the anæmia and emaciation during convalescence.

Acute Irritative Diarrhœa occurs as the result of putrefactive decomposition of the intestinal contents. This result is due to several concomitant causes which may not be always the same. In some cases it is due to the consumption of tainted food, in others to overloading the stomach with indigestible matters, or

* Sterilized milk in patent bottles and in sufficient quantity to last the entire voyage to Australia or Europe can be obtained in India from the Alighar Dairy or from the Bombay Dairy Company.

frequently to chill. It is more apt to occur if chronic intestinal (gastro-duodenal) catarrh and slight congestion of the liver are present.

D. S. Martin has isolated a bacillus with flattened ends from the stools of a patient suffering from tropical diarrhœa furnished him by Sir Joseph Fayrer. This bacillus grows well in gelatine, and produces large bubbles of gas whilst doing so (Davidson's "Diseases of Warm Climates," p. 531).

It is more than probable that it is this organism which produces the frothy stools we are so familiar with in the tropical, hill, and irritative forms of diarrhœa. It may be constantly present in the intestine, but kept in check by the antiseptic action of the bile. A chill acting on the liver would diminish the quantity and quality of the bile, when this flat-ended bacillus could develop unrestrainedly, and so produce diarrhœa.

It is important to be able to recognize irritative diarrhœa and to check it, more especially in children. It is *the most fatal disease of children in the tropics*, and is apt to run on to inflammation of the bowels if not checked. The *peculiar danger* of the disease in infants *lies* in the fact that it *very soon reaches a stage when treatment is of no avail, and the little patient rapidly sinks and dies.* The fatality from this disease in the tropics, greatly exceeds that from infantile bronchitis in Europe or America.

The treatment which checks the ordinary diarrhœa makes irritative diarrhœa worse, viz. by opium or astringents.

Symptoms.—Irritative diarrhœa comes on after food or liquid is taken. It passes through undigested.

The motions are very pale in colour, *frothy*, and highly acid* in reaction—excoriating the anus, and rendering it extremely painful. *The important diagnostic fact to note is that the motions are highly aërated—frothy.*

The bowels become so irritated that they can retain nothing. Hence a motion follows immediately after anything is ingested.

Symptoms in Children.—The child has generally a history of digestive delicacy of some standing. In the early stages it is peevish, cries much, keeps the abdomen hard and tense, and objects to its being touched—showing thus that this part is painful.

The motions are passed immediately after the child is fed. They consist almost entirely of curdled milk, are green in colour, due to the presence of a bacillus (Jellet's "Midwifery," p. 293), and are deficient in bile. *The important diagnostic fact in infants is the green colour of the motions.* They are intensely acid in reaction to a piece of blue litmus paper applied to them, and are foul-smelling also. In older children they may have the adult characters, and be pale, *frothy*, and sour-smelling. The anus is red, painful, swollen, and often excoriated.

As the disease progresses the child does not cry continuously. It becomes too weak to do so. It remains semi-unconscious, and only when disturbed emits a short, peculiar, and distinctive cry, resembling the hydrocephalic cry, again relapsing into semi-coma. The anterior fontanelle is much depressed.†

* Other forms of irritative diarrhœa in which the motions are alkaline have been well described by many German writers.

† To palpate, as a routine procedure, the anterior fontanelle of every infant is a most useful habit to develop. From the feel of the fontanelle to be able to ask, "How long has this child had diarrhœa?" *before*

Towards the end the diarrhœa stops altogether. This buoys up the poor mother with false hopes. The eyeballs turn upwards under the upper lids. The eyelids close down, leaving below only a small slit-like space, through which the white sclerotic of the eyeball shines out. The head may be persistently rolled about from side to side for many hours. This group of symptoms has been, by Marshall Hall, styled *spurious hydrocephalus.* They are due partly to anæmia of the brain, from the drain of liquid produced by the diarrhœa.

Treatment.—The indications are—

1. Clear out the irritating contents of the bowels.
2. Produce intestinal antisepsis.
3. Soothe irritation.

This is effected by giving the following :*—

℞. Olei ricini	...	... ʒvi
Sodii bicarb	...	... ʒii
Salol ...	...	... ʒi
Spts. chloroformi...		... ʒii
Mucilaginis acaciæ ad		... ʒvi
Ft. emulsio	...	... m.

Mixture—6 marks. One mark every third hour.

The dose for an infant is only one teaspoonful. A single dose of this mixture often suffices to give relief to an adult—not to an infant.

The bicarbonate of soda unites with the acid

being told any of the history of the case, inspires confidence, and imparts an air of supernal wisdom. By adopting this method, the physician often finds himself able to supply defective information on the part of the nurse or mother, as to the child's real condition.

* This mixture effervesces after being made up, and often blows the cork out of the bottle.

contents of the intestine, partially neutralizing them, and so diminishing the irritability.

The salol splits up into carbolic and salicylic acids, whilst the castor-oil eliminates all irritating and decomposed matters, and at the same time soothes. If necessary, some morphia may be added to the mixture to check excessive peristalsis. Small doses of grey powder (hydrarg. cum creta) frequently repeated are also often efficacious in checking an attack.

In Infants this disease, if allowed to continue too long, becomes incapable of cure, and death results. All milk should be stopped, and the child put on albumin water * or on soup and barley-water until the motions cease to be curdled. The abdomen may also be poulticed.†

This is an affection needing the most prompt, active, and energetic measures, or the patient will slip on into the incurable stage.

Nothing but the albumin water should be given for some days, and a return to milk feeding should be very slowly and cautiously effected—barley-water being tried first. Occasionally Carnrick's liquid peptonoids diluted with water, or Wyeth's or Armour's beef juices, are found useful. It always takes some time for the inflammation of the bowels (*catarrhal enteritis*) present in these cases to subside.

* Albumin water, children take well, if made as follows : Stir up the whites of two or three eggs with a pint of water (cold, not hot), add a teaspoonful of brandy, a little salt, and sweeten with a little saccharin or half a teaspoonful of glycerine—not with sugar. Give in the same doses as milk.

† The anal excoriation should be allayed with castor or carron oils, or ungt. gallæ c. opio.

In some cases it cannot be got under control without resort to minute doses of opium, *after* the salol and castor-oil mixture given above has been used to clear the bowel. The real remedy lies in prevention, and in at once giving the above mixture the moment any green motions appear. In the tropics this is even more necessary than in cold climates. Astringents for children with this form of diarrhœa are generally fatal. They simply seal up within the child all the putrefying and fermenting germs causing the trouble. They *must be cleared out by purgatives.*

Carlsbad should not be given during the acute attack, but only after convalescence is well established. Its main use is then to remove the catarrhal condition which remains, and to put the liver in proper working order again.

An alkaline solution of bismuth with pepsine, morphia, and hydrocyanic acid—prepared and sold by Messrs. Hewlett of London, under the name of liq. bismuthi et pepsinæ co.—is most efficacious in soothing the irritated intestines after all offending matters have been expelled.

The ordinary sulphuric acid and opium mixture, usually given for diarrhœa, appears to me most unsuited for tropical cases, where almost every patient has intestinal catarrh. It does the greatest harm in irritative forms of diarrhœa.

For adults all meat diet should be stopped, and clear soups, beef-tea, tea, or cocoa made with water given for a day or so. Then arrowroot or cornflour made with water, or Benger's food *made with whey*, which has itself been made with Benger's essence of rennet, can be cautiously started. Carnrick's liquid

peptonoids are invaluable in extreme and asthenic cases. They both nourish, stimulate, and are very palatable. Unless you are extremely cautious about the diet, delicate children will slip through your hands and die in a very few days' illness.

Chronic Gastric Irritability of Strumous Children.—Some children, mainly those of a strumous constitution, exhibit a form of chronic irritability of the intestines, and are continually getting slight acute attacks. These give great trouble, and impede the child's growth and development.

In such cases I have found a mild course of Carlsbad in doses of from 5 to 20 grains of the salt, every morning and evening, of the greatest use. In many cases it effected a permanent cure. The diet will need great attention. I have seen several cases which could only take whey, Benger's food made with whey, or Mellin's food made with water. Older children must be kept from eating fruits or acids.

Irritative Spermatorrhœa of Adolescents.—In young men of strumous constitution, or who suffer from acid dyspepsia, a form of nocturnal emission occurs which appears to me to be purely irritative, and due to excessive acidity of the urine. The emissions cease after only a few days of Carlsbad treatment. The course should, however, be fully carried out, or an early recurrence must be expected, owing to the constitutional causes which produced the condition not having been removed.

I mention this here, because it is often associated with intestinal irritability and the constitutional conditions which give rise to it.

White or pale yellow loose motions of a few

days' duration indicate one of the slight attacks of gastro-duodenal catarrh to which we are all so liable in the tropics—due to a chill or some error in diet. This should be treated by low milk diet and rest. Small doses of 1 grain of hydrarg. c. creta or $\frac{1}{3}$ grain of calomel are very useful. The castor-oil and salol emulsion given on p. 173 is the most rapidly efficacious of all remedies.

The ordinary **dark-coloured copious diarrhœa** which results from a chill causing slight congestion of the liver, had better not be suddenly checked. It is nature's method of relief. Put on a hot stupe over the liver, and rub in turpentine. Hot Carlsbad should not be taken during such an attack. It might increase the congestion. Give about 5 grains of pil. hydrargyri on going to bed at night for a few days, followed in the morning by a teaspoonful of Carlsbad salt in a glass of tepid water.

IV.—Liver.

Symptoms of chronic congestion—"Tropical Liver Engorgement" — Treatment—Diet—Hydropathic belt: its great efficacy—Objections to use of acid —Purulent anal discharge or moist condition of anus in chronic liver congestion—Night sweats and hectic from liver.

There are several different affections included under this very comprehensive term. One has already been described in the concluding paragraph of the last section, and its treatment given.

The chronic form of liver is, however, that which

gives the greatest trouble and is most worthy of attention.

It is due to a slight but continued congestion of the liver, which has the effect of interfering with the proper performance of its normal function—that of elaborating the products of digestion. These pass through the liver in an immature or unconverted condition, and circulate in the blood, where they have all the effects of depressant poisons.

Tropical Engorgement of the Liver.—It has already been shown that the effect of a hot climate, as well as of malaria, is to congest the internal organs, including the liver. To this contribute in no small degree the more generous diet in which many Europeans indulge in the tropics—at least, in India; the enforced want of exercise, and, as Manson has so ably pointed out in his "Tropical Diseases," the greater ease and luxury of the life led compared with European conditions.

Obstructed in its attempts to return through the engorged liver, the blood from the portal system seeks out for itself other channels by which to return to the heart.* Many of these are invisible to us, but we can see that the superficial epigastric veins are enlarged and tortuous, that over the area of liver-dulness on the side and front of the chest are a number of small, purple, filiform, cutaneous veins,† which have become permanently enlarged. Around the navel, or running upwards in the middle line from it, may also be a

* As, for instance, the retro-peritoneal veins of Retzius uniting the mesenteric veins with the vena cava.

† These veins are probably part of the accessory portal system of Sappey, uniting the epigastric and mammary veins. This symptom on the lateral aspects of the thorax has not been previously described, so far as I know.

bunch of varicose veins—the so-called *caput medusæ*. As straws best show how the wind blows, these show us what is the state of affairs in a patient's interior. He may also complain of piles. He probably presents the *hepatic facies*, is thin, sallow, the eyes deeply sunken and dark-rimmed, the whites yellow-tinged, and the whole eye inclined to be very watery or tear-suffused on exposure to cold or any irritation. The complexion has an earthy, muddy tinge, and on the cheeks or nose may be blue enlarged veins.

Symptoms.—There may be more or less sense of heaviness, tenderness, or actual pain in the liver. Localized tender or painful spots are often present. A frequent site of these is in the right shoulder and down the arm, under the right shoulder-blade, or over the cartilages of the eighth or ninth ribs on the right side. Another site of tenderness or uneasy sensations is about three inches directly below the apex of the inferior angle of the shoulder-blade. This is due, probably, to wind in the duodenum (second stage), and can be at once relieved by some chloroform water, raw spirits, or other good carminative. The most usual sensation is for the patient to feel that his liver is as heavy as lead and tender on deep pressure, with a general sense of distension and fulness. The organ is often perceptibly enlarged, and suffers a painful jar on any sudden movement.

An intense melancholy, deep mental depression, sense of failure in life, want of energy and of self-reliance, a feeling of incapacity, stupidity, or muddle-headedness are all more or less characteristic of this form of liver affection. Heine exactly expressed the sentiments of a victim of liver when he wrote,

"*Grau wie der Himmel scheint vor mir die Welt.*" He probably had it himself at the time.

The tongue is thickly loaded, the breath offensive, the appetite capricious, very slight or voracious, when dilatation of the stomach is present. In some cases there is constipation, in others diarrhœa. The motions are often pale and whitish in colour. Sleep may be either deep and almost drunken in its heaviness, or scanty, fitful, and disturbed by dreams and nocturnal terrors. In both cases it is unrefreshing, and on rising in the morning the bones and entire body and limbs ache.

A feeling of nausea often remains constantly present. Bilious vomiting on rising in the morning occurs in free livers who consume much alcohol. In most cases the attempt to use a tooth-brush in the morning excites nausea or vomiting. This is often the first symptom of which the patient informs his doctor. The chronic state of irritability and bad temper of liver patients has already become proverbial. On account of it they are generally shunned and avoided.

Treatment.—The diet will need to be freely cut down to tea,* toast, porridge, soup, light puddings, poached eggs, etc. All alcohol should be stopped. The more nearly the dietary approaches both vegetarianism and total abstinence the better.

All the other symptoms "can be set right with calomel," blue pill, podophyllin, or euonymin given in moderate doses nightly for a few days, followed each

* In some cases tea, especially when taken rather hot, produces indigestion, with great depression. In such cases milk and soda or weak cocoa should be substituted.

morning by a teaspoonful of Carlsbad salt in half a pint of tepid water. An early opportunity should be taken of putting the patient through a *complete course of Carlsbad.* The above will suffice as a temporary measure only. Liniment of iodine or of turpentine should be applied freely over the liver and abdomen until the skin becomes tender. This condition of tenderness should be maintained by occasional repetitions of the liniment.

A hydropathic belt applied until the skin breaks is also very useful. Hot salt-water baths and electricity applied over the liver whilst in them are useful in obstinate cases.

A **hydropathic belt** consists of a piece of swansdown calico about 4 feet by 1 foot wetted in tepid water and applied next the skin around the waist. Over this is wrapped a piece of mackintosh to prevent evaporation, and over both a flannel roller is wound several times round the waist to maintain warmth and keep all in position. The swansdown is removed twice or thrice daily, scalded, and reapplied. In a week or ten days under this treatment the skin breaks down, and the entire waist becomes red and raw. The bandage is, however, continued as before, and after a time complete healing results. The hydropaths allege that this is due to all deleterious matters having been eliminated from the body. It is remarkable how the sore heals up, under the very same treatment which produced it.

Be this as it may, this is one of the most successful treatments for both malarially enlarged liver and spleen, as well as for the functional form of liver derangement we have now discussed. Under it many

cases which have resisted all other treatment get quite well. It is also very useful in continually recurring attacks of ague which resist all other treatment. With the method of treating liver cases by large doses of nitro-muriatic acid I entirely disagree. It may be taken as a general rule, that liver cases invariably have intestinal catarrh, and this condition is exacerbated by any form of acid treatment; the intestines are irritated, nutrition thereby impaired, and perhaps obstructive jaundice also produced.

Small doses of nitro-muriatic acid—5 to 7 minims—are only admissible with food, *some time after* a continuous course of alkalies and salines, to increase appetite and give tone to the stomach.

Many tropical patients suffer from a very unpleasant and distressing symptom, viz. a **permanently moist condition of, or purulent discharge from,** the anus. This is due to a congested state of the portal system producing hæmorrhoidal congestion of those parts. It is often associated with piles. If these do not disappear after a course of Carlsbad, they should be removed by operation. A few courses of Carlsbad, enemata of it used night and morning with restricted diet and stoppage of alcoholic drinks, completely cures this condition. A permanent itchiness of the anus is also a frequent symptom of chronic functional liver trouble (Fothergill).

Change to a good climate is often necessary.

People in the tropics have an idea that violent exercise is useful during an attack of liver. This is a mistake. It tends rather to aggravate the attack by increasing the force of the circulation and driving

more blood into the already engorged organ. Take very little exercise for a few days, until the liver has been relieved a little by calomel, blue pill, and Carlsbad. After that take exercise quietly and judiciously, and a much better result will be obtained.

Slight Hectic and Night Sweats, even in cold weather, are sometimes found in tropical patients as a result of tropical engorgement of the liver, or of an absorption of some of the deleterious products to which it gives rise. These symptoms disappear if 2 grains hydrarg. cum creta are given night and morning for a few days—the morning dose to be preceded by three doses of very cool Carlsbad water. All alcohol must be stopped, and the diet simplified as much as possible.

Carlsbad treatment must not be considered an efficient substitute for change to a bracing European climate. No such substitute exists. Carlsbad only professes to be a fairly effectual, temporary, makeshift—able for a while to ward off the evil results of tropical residence or the onset of insidious organic disease. Taken at the wrong season in the tropics, it may injure instead of ameliorating. Given after organic disease has gained a firm hold on the system, it may cause the most disastrous results. There are very few functional disorders, even, which it professes to cure. What it does, is to put nature in a condition most likely to command success in the struggle against disease. Its limitations are well defined, and must be observed.

CHAPTER IX.

ON SOME **FORMS OF DYSPEPSIA** COMMON IN THE TROPICS.

Primary indigestion—Its varieties, viz. *atonic, bilious, irritative and catarrhal, and their treatment—Three varieties of irritative dyspepsia: the indiscretionary, the strumous, and the gouty—Painful dyspepsia, "waist-pain"—General directions to dyspeptics—Skeleton menus—Liver indigestion or secondary dyspepsia: its peculiar symptoms—Treatment.*

LIVING, as the great majority of us in the tropics do, in a bad climate, amidst the depressing influences of heat, continual work, worry, and inferior food, it is not to be wondered at that dyspepsia in many forms is rife amongst us.

To understand the various kinds of dyspepsia, and to be thus able to intelligently help your doctor in the treatment of your own case, a little preliminary knowledge is necessary.

The food we eat is broken up, rendered soluble and fit for absorption into the blood and system whilst in the stomach and intestinal tract.

This may be termed the *First Stage of Digestion.*

Any interference with or imperfect performance of this stage is termed **Primary Indigestion.**

The food so reduced to a soluble and easily absorbed condition is sucked up mainly into the veins of the portal system, which all pass through the liver.

The products of digestion in their passage through the liver are subjected to a further refinement and elaboration.

This may be termed the *Second Stage of Digestion.* Any interference with this process is termed **Secondary or Liver Indigestion.**

If this process of revision and control were not adopted in the liver, deleterious and poisonous matters would accumulate in the system and speedily prove fatal.

This ejection of these deleterious matters from the system is known physiologically as **proteid metabolism.** The completed and perfected product of proteid metabolism is urea, excreted in the urine. One of the commonest products of imperfect proteid metabolism is uric acid, which, retained and accumulated in the system, produces gout—a familiar but unwelcome acquaintance.

As before pointed out, the starchy and saccharine food we eat is eliminated, after serving the uses of the body, by way of the lungs, as carbon dioxide and water. The proteid, animal, or nitrogenous food we consume is, however, excreted after we have made use of it, mainly by the kidneys as urea. The undigested residues of all kinds of food are eliminated through the digestive tract.

A pure classification of the various forms of dyspepsia is hardly possible, as many various clinical

and pathological types occur simultaneously, and overlap or complicate each other.

After much deliberation, I have adopted the following classification :—

A.—Primary Indigestions.

TYPES.—**1. Atonic.**

2. Bilious.

3. Irritative... α. **Indiscretionary.** β. **Strumous.** γ. **Gouty.**

4. Tropical or Catarrhal.

B.—Secondary or Liver Indigestion.

1. Atonic Indigestion—The Dyspepsia of Exhaustion.—This may be most simply described as a complete exhaustion—an extreme state of fatigue of the stomach.

It is met with in anæmic females and in people run down by malarial or other exhausting disease.

Symptoms.—The subjects of this form of dyspepsia are pale, sallow, anæmic, listless, flabby, disinclined for, and incapable of, any sustained exertion or work. There is little or no appetite ; the gastric juices, the functions of which are to act upon and digest the food, are deficient both in quantity and quality.

The tongue is large, pale, furred, flabby, and *indented at the edges by the teeth*—the breath heavy and unpleasant. Suppression of the menses and constipation are the rule.

The patient usually has an appetite for things which are most indigestible and injurious—*e.g.* salads, cucumber, tinned fish, savouries, nuts, etc.

In the purest forms of this variety of dyspepsia

the patient complains of few subjective symptoms referable to the digestive tract. In mixed types there may be *waist-pain*, heartburn, pain under the left breast and up along the sides of the breast bone, palpitations, breathlessness, giddiness, singing in the ears, faintness, etc.

Most of these are merely symptoms of the anæmia which accompanies this form of dyspepsia.

The gastric juice is a natural antiseptic, dissolving and digesting the food before it can decompose. Owing to its deficiency in atonic dyspepsia, the food taken is not properly digested. It decomposes in the digestive tract, becomes sour, rancid, and gives rise to much flatulence and eructations of wind.

Treatment.—This form of dyspepsia *should not* be treated by Carlsbad. Homburg water to start with, in 6-ounce doses, twice every morning, will be found to answer well. After the system has been roused and vitalized to a certain extent by it, bitter and acid tonics with an aloes and iron pill after food should be given. Fresh air, exercise, riding, open-air games and amusements, sea-bathing, or a marching tour in the hills or Kashmir will be necessary to restore the general health. Good, plain, nutritious food; grilled chops and steaks (with a prohibition of tea and made dishes) are advised. If the patient is very weak, raw meat juice, raw meat sandwiches, or Canrick's liquid peptonoids give a maximum of nutriment with a minimum of trouble in digesting it. Red wines (Burgundy, Carlowitz, or Australian claret), or stout, suit many cases. In others, if found not to suit, they should not be continued. A change of air or climate is almost always necessary for these

cases. They are apt, if neglected, to run on into consumption. Indeed, the great majority of cases of consumption in the tropics are originated by digestive "break down" of this kind. Highly sensitive girls occasionally develop this form of dyspepsia with anæmia, neurasthenia, and some form of mental disturbance after an unfortunate *affaire de cœur*. Such cases require a course of Weir-Mitchell treatment.

2. Bilious Indigestion—Drunkard's Dyspepsia.—This form is characterized by the occurrence of bilious vomiting on first rising in the morning. It is usually the result of alcoholic intemperance of some duration, and is associated with congestive changes in the liver, which are certain to end in incurable organic disease * of that organ and of the stomach, unless temperate habits are speedily resumed.

Other forms of bilious vomiting, wholly independent of alcoholic intemperance, occur in individuals whose digestion is naturally feeble, but who have not the strength of mind to refrain from certain articles of food. Greasy dishes, fats, butter, cream, rich foods of various kinds, all excite it in various constitutions. Its occurrence is a matter of individual peculiarity. The individual should, however, learn to refrain from what he knows will not agree with him.

The muscular coats of the stomach and intestines

* Case No. IV.—An elderly retired officer of high rank, died under circumstances and with symptoms strongly pointing to his having been slowly poisoned with an irritant poison. His stomach was examined. From the thickness of its coats, the appearances of chronic inflammation on its interior and the absence of any traces of poison in it, there was no doubt but that death was due to inflammation of the stomach in a gouty subject of intemperate habits. The coats of the stomach were as thick as the sole of an ordinary boot, and its condition amply explained the continuous bilious vomiting from which he suffered.

keep up wave-like contractions during digestion, which drive the food on in a downward direction. Under certain circumstances the direction of these contractions becomes reversed, and bile is driven back into the stomach. This stops gastric digestion, and leads to nausea and vomiting.

Some persons get attacks of bilious vomiting once or twice monthly. Such attacks may be associated with the unsuspected presence of gall-stones.

Treatment.—The resumption of temperance in food and drink with a course of Carlsbad treatment will soon produce a marked improvement. Even in cases where the presence of gall-stones is the cause of the attacks, it helps to remove them and further removes the tendency of the liver to form them. Some blue pill at night, twice weekly, will be found a useful addition to the treatment.

3. Irritative Indigestion — The Dyspepsia of Gluttony.—When a person, unaccustomed to do so, walks too far his feet become red, irritated, and blistered. If the stomach has large quantities of food thrust into it at meal-times and also at frequent odd intervals during the day, it gets over-worked and irritable. If the food supplied to the stomach in this profuse manner is of an indigestible kind, the effect it produces is hastened and aggravated.

The stomach can only dispose of a certain amount of food properly, and if this quantity is exceeded it is either rejected, as in bilious vomiting, or the food becomes sour, acid, and irritating from decomposition. This irritating mass in the stomach excites it to violent propulsive movements—their object being to drive it on down into the intestines. These in

their turn get irritated also, and drive it on still further, and so a diarrhœa of undigested food may finally result. Nature has thus two ways of relieving itself from such a condition of affairs by (1) vomiting, (2) diarrhœa.

When diarrhœa occurs it usually takes the form of the irritative frothy affection described at p. 171.

Chills acting on such a case as I have here described are the commonest cause of the chronic white diarrhœa (*Diarrhœa alba*) so common in the tropics. It is a gastro-intestinal catarrh, and most amenable to properly conducted Carlsbad treatment and simple dieting.

The continued irritation of the stomach in these cases leads to an excessive production of acid in its interior. This causes still further irritation. This acid is partly the result of decomposition and partly an increased secretion poured out under the influence of the irritation present.

Symptoms.—A furred tongue **with small red spots in front and enlarged papillæ behind.** The tip and edges of the tongue are often quite red and painful or tender when pressed against the teeth. There is *pain* or tenderness over the pit of the stomach—*increased by pressure.* Pain due to wind alone, is rather relieved by pressure. Sensations of pain, distention, and discomfort are experienced after taking food. Flatulence and eructations of wind and sour food into the mouth are also frequent. There may be heartburn—a burning sensation commencing at the stomach and extending right up to the throat —or a motion of the bowels immediately after food is taken.

Burning sensation in the palms of the hands and soles of the feet, more especially when in bed at night, is a very frequent symptom. The burning of the soles of the feet is in some cases so pronounced that patients have to sleep with the feet outside the bedclothes, to cool them.

When Second Physician to the Mayo Hospital, Lahore, I found it made this form of indigestion easier for the students to understand and remember, to divide it into three clinical varieties, all of common occurrence. These are: the form I have just described, which may be termed—

α. **The Indiscretionary,** due to gluttony.

β. **The Strumous,** occurring in children with a scrofulous (consumptive) taint.

γ. **The Gouty,** occurring mostly in elderly men.

β. **The Strumous Type.**—Strumous children are frequently the subjects of an irritable condition of the digestive tract. This manifests itself in the infant in curdled, slimy diarrhœa with burning acid motions excoriating the parts; in the child, in a very tender and easily irritated stomach, which a little fresh fruit or any unwonted amount of food inflames. These children seem rapidly to develop an excessive gastric acidity, whether from food decomposition or irritative secretion I cannot say. This leads to excessive acidity of the urine, local irritation, and nocturnal enuresis (wetting of the bed).* The irritability of the digestive tract renders them incapable of making full use of the food they eat, and they remain in consequence puny and delicate or grow up lanky and sickly.

* This may occur also from enlarged tonsils and adenoids.

γ. **The Gouty.**—This occurs in people who have a family history of gout. They are usually at or beyond the period of middle life.

These cases, in the most pronounced types, have a large clean tongue, almost as red as a beefsteak. Such cases suffer much from acid eructations and tenderness of the stomach and bowels; the palms of the hands and the soles of the feet are found to be hot, and the patient complains of a burning sensation in them, which is worse at night.

This condition in a man over forty-five ought always to be regarded as a grave one. The continued irritation of the stomach is most likely to **result in cancer** (pyloric). Such cases should be sent to Vichy without delay. There are milder degrees of this affection which a carefully regulated diet and Carlsbad treatment will set right, but frequent relapses will occur unless the greatest care in drink and diet is maintained.

4. Tropical or Catarrhal Indigestion.—This form is the result partly of the congestive effects of the climate on our internal organs, and partly of successive slight attacks of the irritative form.

Symptoms.—A thickly furred tongue, known as the Indian or *tropical tongue*, frequent irregular attacks of diarrhœa and of slight jaundice, with pale, whitish motions, heavy, muddy, yellow eyes. The patient is heavy, languid, lazy, but short-tempered and irascible. This form of catarrh is usually associated with more or less congestive liver trouble. In such cases there is a feeling of weight and heaviness in the liver, with distension and fulness of the abdomen. Tenesmus is a frequent symptom. The calls

to stool are urgent, but little relief is obtained, only small, slimy, mucus-coated motions being voided. Piles, with a moist or purulent discharge, are also often present. The appetite may be voracious if dilatation of the stomach is also present, or almost *nil* in other cases. There is an unpleasant taste in the mouth, and the breath is heavy and disagreeable. The urine often burns, scalds, and irritates. A certain amount of atony is often associated with this form.

Treatment.—The water should be taken in small doses to start with, viz. 3 to 6 ounces at a temperature of 70° F. thrice daily—morning, noon, and night. When the artificial water is used great care should be taken to add to it some soda-water when making it up. The presence of the gas in it is necessary to prevent it producing atony of the stomach—a complication most likely to occur in the treatment of this form of dyspepsia. Enemata of the hot water about 100° F. should be given every night. For drinking, the water should be much colder, about 70° F. This affection is really a chronic catarrh of the stomach, intestines, and bile-ducts, with more or less chronic congestion of the liver. This is one of the affections in which Carlsbad effects the maximum of benefit. No acids are on any account to be allowed. In these cases they are most unsuitable. The course will in these cases need to be prolonged to five or six weeks. If heartburn arises during it the water should be stopped for a few days, and on its again being resumed should be given still colder. The amount of the dose must be regulated to the strength of the patient. During the first week single 6-ounce doses, thrice daily, suffice. During the second week the

morning dose may be doubled, and during the third week trebled. Except in very obese subjects, it is seldom necessary to further increase these quantities.

The onset of **atony of the stomach** must be carefully watched for. Heartburn and want of appetite are the initial symptoms. When these arise the water is to be at once stopped for a few days, during which a single glass of three ounces of Homburg water may be given in the morning. Highly aërated (carbonated) waters should be given with meals ; tea at breakfast should be stopped, and a glass of soda-water and milk substituted for it. **As long as the Carlsbad water is doing good it increases the appetite.** *When a Carlsbad patient ceases to have a good appetite for his meals, then search for some complication and lower the temperature of the water.*

Painful Dyspepsia—"Waist-pain."—There is a special form of pain in the stomach, of frequent occurrence in all the various forms of dyspepsia, known generally as "waist-pain." I cannot say exactly to what it is due, but it is probably the result of a combination of flatulence and irritation.

The following mixture is most effectual in relieving it :—

℞. Sodii bicarb.	...	... ʒij
Acidi hydrocyanici dil. B.P.		... m. xxiv.
Cocaine hydrochloratis		... gr. iv.
Glycerini	...	... ʒi ss.
Aq. chloroformi	...	... ad ʒviii.
		M.

MIXTURE.—8 marks. One mark to relieve pain about an hour before food.

Hewlett's mist. bismuthi et pepsinæ co. is also efficacious in those who can tolerate opium or morphia.

The waist-pain usually comes on when fasting, about an hour before meals. Food sometimes relieves and sometimes aggravates it. I find it most frequent in constipated subjects, who have a deficient flow of bile.

General Directions to Dyspeptics.—The following hints will be found of use :—

Drink little or no fluid with meals ; it dilutes the gastric juice and weakens its power of digestion. For this reason soup with luncheon and dinner, and tea with breakfast should be given up. If you cannot do without fluid at meals, try taking a cup of warm soup about an hour *before* meals. Don't drink until about two hours *after* meals.

Give up tea, especially afternoon tea.

Eat as little at a time as possible. The stomach can dispose of a little of most things, but not of too much of anything.

Avoid chills. Avoid alcohol, aërated drinks, tobacco, and all excesses or indulgences of every kind. Drink plain boiled or distilled water.

The Roman Catholic system of eating no meat on one day of the week and of fasting to a certain extent during Lent is most admirable, and worthy of adoption. The Mussulmans have the same idea in their "fast of the Ramzan," but carry it too far, and weaken and reduce themselves extremely by the rigidity of their fast. They even abstain from drinking water during daylight.

In spring, during the change of season, we are most liable to illness. In spring occurs that change

of blood the Germans so concisely term *Blutveränderung*. It changes from the rich, thickened fluid of winter to the thinner and weaker liquid suitable for summer or a hot climate. In the north of India, where a single week sometimes takes us with a bound, from very cold into very hot weather, this change of blood is likely to be attended by various disturbances of the equilibrium of health. By giving a partial rest to our digestive organs, and not overloading them during this period, we give the *vis medicatrix naturæ* an opportunity of asserting itself and clearing away the dawnings of disease.

The great difficulty with dyspeptic patients is to get them to conform to a system. They find it too irksome. My advice to such persons is—"You can eat a little of everything, but not too much of anything." Starvation or moderation is one of the best cures. It is only when his sufferings become too great that the dyspeptic will submit to a system. The very moderate restrictions of a Carlsbad course for three weeks ought to be within the capabilities of endurance of most, especially if they consider that renewed health and vigour of digestion will be earned thereby. Persons suffering much, and who cannot control themselves, should go to a foreign watering-place or an English hydropathic or other establishment, where they would find it impossible to get any save the food permitted them.

I append a few skeleton *menus* for dyspeptics and Carlsbad patients. During the Carlsbad course it is better to take luncheon daily. At other times a late breakfast, about twelve o'clock, suits most people better in the tropics.

BREAKFAST.

1.—*Carlsbad Regulation.*

3 soft-boiled eggs (Indian eggs being smaller, three are allowed).
4 slices zwieback (toast), about 6 ounces.
1 cup of tea.

2.—*For Renal Cases.*

Cold ham, 3 ounces.
Zwieback.
1 cup of tea or cocoa.

3.—*Ordinary Cases.*

Sweetbread, 3 ounces (done on gridiron).
Zwieback.
1 cup of coffee, tea, or cocoa.

4.—*Ordinary Cases.*

Brain cutlets, 3 ounces.
Zwieback.
Tea, coffee, or cocoa.
No jams and no acids or salads allowed.

LUNCHEON.

1. Boiled fish (Rohu).
   Rice-pudding (containing eggs and raisins).
2. Chicken purée.
   Custard Soufflet.
3. Rice with 2 boiled eggs.
   Stewed figs and custard.
4. Fried fish, 2 eggs and rice (Butchwa or Chilwas).
   Stewed apples, pears, tiparis, guavas (according to season), with custard.

DINNER.

1. Roast sirloin of beef, 5 ounces.
   Stewed figs with custard.

2. Boiled mutton, 5 ounces.
   Stewed prunes and rice.
3. Irish stew.
   Stewed apricots (dried Kabuli) and custard.
4. Roast chicken.
   Vermicelli pudding (without cheese and with very little butter).

Renal cases should take salt meat or fish, at, at least, one meal daily.

These skeleton *menus* are to be supplemented with well-cooked dal, potatoes, and vegetables to taste. It is to be remembered that watery vegetables like cabbages, turnips, artichokes, vegetable marrows, green peas, beans, etc., are very productive of flatulence, and should either be avoided or taken in very small quantities.

Well-boiled *dal* makes an excellent addition in place of watery vegetables. It contains the same amount of nitrogen as meat, and is an excellent laxative. It is a kind of split pea largely used in India.

Use Stern's pepsalia in place of ordinary table salt.

B. Secondary or Liver Indigestion.—This form is due to an inactivity on the part of the liver, which fails to exercise a proper supervision and control on the products of digestion which pass through it. This results in the system being supplied with the imperfectly elaborated products of an impure digestion, instead of with pure and healthy blood. These products of imperfect proteid metabolism act as depressant, narcotic, and irritant poisons. Liver indigestion occurs most frequently in persons who have much business worry, making unceasing demands upon their mental faculties.

It is an affection of high-pressure, nineteenth century existence—one of the prices we pay for our increasing civilization and artificial lives in towns and offices. It is of frequent occurrence in the children of gouty, rheumatic, or malarial ancestors, who inherit the defective livers of their parents.

Symptoms.—The subjects of this affection are very often of great mental capacity. Keen, eager, alert, of powerful mental grasp, terse, trenchant and demolishing in argument, vigorous, prompt, and decisive when roused to action, they are in the human what the sharp Scotch and Irish terriers are in the canine race, but without the good temper and untiring activity of these animals.

These good qualities are marred by a petulance, querulousness, irritability and irascibility of temper, and by an inequality in the level of their mental achievements from day to day. His friends remark, "He is a very clever fellow, but he has a very curious temper."

Some men turn out most excellent work one day, whilst the next it is very poor. This is often the result not of a defective character but of liver indigestion.

Sallow, thin, sharp-faced, with rather an unwholesome look, they seldom resemble the typically florid, ruddy Briton.

It must be distinctly understood that I am only describing a prominent type in which this affection occurs, and that it is not by any means confined to persons answering to the above description.

The sallow complexion and anæmic appearance of these patients must not be mistaken for ordinary

delicacy. As a rule it is not. It is the anæmia of gout—of uric acid in the blood—the so-called poor man's gout or anæmic variety of the disease as distinguished from the florid, ruddy, hearty type of gout as it affects the good old country gentleman.

The state of temper in the two varieties of gout is interesting. In the florid type there are violent ebullitions of healthy, but transient, wrath. In the anæmic variety there is a continual smouldering of ill-suppressed irritation, ready to break out on the slightest cause. The patient's entire nature apparently becomes warped. He no longer trusts or believes in any person or thing. His actions become those of a malevolent fiend, and he ultimately comes to resemble a snappish, ill-conditioned cur more than a man. Such men should never be promoted to administrative posts; they exasperate and irritate the men who serve under them over petty trifles, and turn the best of public servants into disloyal subjects. Government would do well to hold a medical board of skilled physicians on their selected candidates for posts of high authority, and reject any one suffering from the anæmic form of gout or liver indigestion—until cured. If he gets a relapse he should be suspended.

CASE V.—Mrs. ——, tall, powerfully made, of pale complexion and rather anæmic, complained of frequent neuralgias and nervous headaches which utterly prostrated her for days at a time. Her appetite was most excellent, and she had been ordered liberal supplies of port, champagne, and rich food under the impression that she was delicate. Iron in all forms had also been given without any good result. She was in no way weak, could take long walks and rides and play tennis vigorously. Inquiry as to previous illnesses elicited the fact that she had had an attack of gravel, and had passed a small renal calculus.

This cleared up the case at once. Her anæmia was gouty ; * the gravel and renal calculus passed, having been undoubtedly uric acid ; the neuralgias and headaches were also the result of gouty matters in the blood. I reduced the liberal dietary and stimulants, and sent her to Vichy for a course of the alkaline waters there.

CASE VI.—Dr. ——, a tall, pale, thin, delicate-looking young man, complained of symptoms of liver with catarrhal dyspepsia and slight dysentery. Inquiry elicited a gouty family history, and that he had suffered from a slight attack of dry pleurisy over the apex of the right lung, from a chill caught during the previous hot weather, and from frequently recurring ulceration of the throat with concomitant ear inflammation (both of frequent occurrence in the gouty). The diagnosis was that his troubles and his pleuritic attack especially pointed to a gouty constitution, and that treatment directed against it would relieve him. He was therefore sent to Carlsbad. A few years later I met him, looking well-nourished, healthy, and with a rubicund visage —the picture of health. He stated that the Carlsbad physicians had quite concurred in the gouty view of the case, and that he had been quite a new man ever since.

The commonest symptoms complained of are intense headaches, or a persistent feeling of stuffiness in the head, dulling the energy and blunting the faculties (from which, however, a determined effort temporarily rouses the patient to a fairly efficient performance of any duty), violent neuralgia, irritability of temper, and great depression of spirits. These symptoms often alternate with periods when the patient feels perfectly well. He is an individual of various moods and tempers—one day well, another day not.

Women frequently suffer from this form of dyspepsia. With them it is often neurotic or ovarian in its origin, and exhibits marked exacerbation at or about

* A famous London physician has since confirmed this diagnosis.

the menstrual periods, the nervous energy called away to conduct these functions apparently detracting from the power of the liver to do its work properly.

In men previous syphilitic attacks are often the cause of liver indigestion, and a course of iodides clears it off.

Persons who eat meat in large quantities, thrice daily, often suffer from these symptoms, more especially from irritability of temper. All are familiar with the fierceness and irritable tempers of dogs and cats fed on meat. Meat-eating is to a great extent an acquired habit. Once acquired it is with difficulty relinquished. Many delicate persons would find it impossible to do without the concentrated form of nourishment contained in meat. But there are others, more especially those of a gouty constitution, who could equally well do without it, and to whom it is supremely injurious—sowing in them the seeds of disease and early death. A great deal of nonsense is talked about the impossibility of doing without meat—that we should get weak, run down, etc., etc. A few days ago I examined thirty Sikh recruits, all over six feet in height, fine, strong, active men, in the perfection of vigour and muscular development. These men had hardly ever tasted meat!

Many people of gouty constitution would permanently avert the disease if they became modified vegetarians. They might do this without being too strict about it, *i.e.* they might take meat soups, eggs and fish with brown and meat gravies and butter and milk. Dal or dried peas contain the same amount of nitrogenous matter as beef and mutton. Vegetable

nitrogen seems not to have the same faculty for going wrong during digestion in the liver, that animal nitrogen (derived from meats) has. Vegetarians suffer from gout to only an infinitesimal extent compared to meat-eaters. A diet in which meat is replaced by fish is often as efficacious as pure vegetarianism.

On one point I disagree with the Carlsbad physicians. They allow tropical patients a diet too rich in meats. This consequently fails to give the liver that rest from work it requires.

Treatment.—The subjects of liver indigestion are generally more or less of a gouty constitution. This means a secondary or liver indigestion of animal food. The treatment therefore resolves itself into diminishing the consumption of animal food or replacing it with vegetable food found by experience to be not so likely to produce the symptoms of liver indigestion. A fish and farinaceous diet is often equally efficacious. Abstinence from alcoholic liquors should also be practised as much as possible, as they interfere with the process of liver digestion. Daily exercise in good, fresh country air is indispensable. Faradization over the liver often has a most beneficial effect. Above all, a yearly course of Carlsbad will be necessary to put the liver into proper working order. This is by far the most important part of the treatment, as everything depends on that organ being induced to work properly.

Many cases of all varieties of digestive disorders will be met with, in which all treatment is of no avail —the digestive organs are radically defective, and cannot be made to act properly. In such cases the

public are apt to be exacting and to expect the medical profession to work miracles. The profession grieves, equally with the sufferers, over its own powerlessness, to do more than make the best of inefficient materials or defective organs.

Such patients must learn their own limitations and live within them, as far as possible, a healthy open-air life of active exercise, avoiding those agreeable foes of digestion, tobacco, alcohol, and tea.

CHAPTER X.

HINTS FOR TROPICAL RESIDENTS AND RETIRING OFFICIALS.

Hints on how to maintain health in the tropics—Water—Food—Clothing—Prevention and treatment of chills—How to grow fat—How to grow thin—Hints to retiring officials—Wasted furlough—Bad digestion the worst defect in the tropics—Selection of those medically fit for the tropics.

How to maintain Good Health in the Tropics.—A great deal, not alone of the success in life but also of the enjoyment of it, depends on maintaining a good state of health. I have endeavoured to point out how disease assailed us in the tropics by undermining our digestive and blood-purifying organs, and how this could be remedied by courses of Carlsbad, bathing, diet, exercise, and electrical treatment. In the vast majority of cases this can be carried out in the hills. Unfortunately, people usually go down from the hills at the time of year when they really begin to be bracing. The Indian hill climate is at its best in October, November, and December; and if you really want to get braced without incurring the expense of a trip to England, take your leave during these months. If possible, a marching tour should

be undertaken. Life in a hotel or bungalow will not brace the system in anything like the same way.

By judicious repetitions of these measures at intervals of two or three years, illness may be averted and good health maintained. Never permit yourself to get too far run down in the tropics. The point from which it is impossible to stop the downward course is very easily reached.

Disease germs gain entrance into our system to a great extent through the water we drink. This should always be boiled in order to thereby destroy them.

Never drink water which has been inside a *mussuck* or any leathern vessel. Once one of these vessels becomes tainted with foul water it is impossible to ever cleanse it again. Filters are a snare and delusion. You never can depend on their being kept clean. A dirty filter is worse than none. Instead of purifying, it infects the water with the collected and putrefying impurities of days, weeks, or months. Have water brought from the tap or well in an enamelled iron jug—boil it, put it back into the same jug again, and lay a clean napkin over its mouth to keep out flies, dust, etc. Don't use porous earthenware vessels.

If you get any filter, get a Berkfeld. This pumps water through a layer of fine kaolin, thus freeing it from all living germs.

Many persons imagine that soda-water must be always clean and pure. Like many other popular impressions, this is a wrong one. Disease germs are not destroyed by the process of manufacture.

As to food, none save invalids or very delicate women or children should eat meat more than once

a day. Never eat very acid or unripe or unsound fruits. Have fruits made into stews as often as possible. Eat plain, simple food—chops, joints, fowl, game—and avoid made dishes and *réchauffées*. One of the most fruitful causes of illness is eating too much. Eat a little slowly, and masticate it thoroughly.

Hot-weather Clothing.—The general rule is to clothe yourself so as to avoid a chill. Theoretically the best way to do this is to wear pure woollen underclothing next the skin. Cartwright and Warner's or Jaeger's thinnest under-vest can be worn in the cold season, but in the hot, few can stand them. They are too warm, and produce too much skin irritation. There are several alternatives, viz. under-vests or shirts made from the following: silk and wool, Ceylon flannel (a mixture of wool and cotton), cotton twill lining (an absorbent material made by the Elgin and Muir Mills, Cawnpore), or old flannel from which the coarse nap has been already worn off by previous wear. Wear flannel suits—avoid cotton.

I have found shirts made of Cawnpore twill, with suits of thin flannel worn over them, the best hot-weather day costume. With it no under-vest need be worn, and thus the risk of prickly heat reduced to a minimum. For night wear, a good plan is to have some ordinary cricketing flannel made up into sleeping-suits. Wear these all through the cold weather, and have them frequently washed. By the onset of the hot weather the flannel will have lost its rough irritating surface and grown so smooth as to be non-irritating. As long as you are young, vigorous, and healthy, chills will not affect you much. When they begin to do so it is an indication that the constitution

is suffering from the climate. At night in the hot weather we are especially liable to chills. The body becomes drenched with perspiration during sleep. This is what is known physiologically as a *paralytic secretion* or sweat of exhaustion. It is therefore very necessary to wear night clothing sufficiently thick and absorbent to prevent chilling.

After violent exercise, when the clothing is drenched with perspiration, an overcoat or warm wrap should be put on. Even this is often insufficient to prevent chill, and it is much safer and better to have a complete change of clothing and a rub down with a towel or a tepid tub.

Treatment of Chill.—A hot bath of about twelve minutes' duration, mustard or linseed poultice or hot-water bag over stomach and liver. The patient should be put to bed after the bath and a warm drink given. An aperient pill at night and a saline aperient draught in the morning for a few days will carry off any further ill effects. Prompt treatment of this kind may often save a patient from abscess of the liver and death.

Service in the tropics produces, in many instances, two types of figure—the abnormally fat and the abnormally thin. I know a number of thin people the absorbing aim and object of whose existence it is to **grow stout.** A course of Carlsbad often makes these people stout. This is ascribed to its action on the mesenteric glands and lymph channels through which fatty matters are absorbed into the system—these are opened up, and obstructions and indurations in them dissolved and removed. At the same time the digestive powers are improved. A general

increase of nutrition and body-weight is the result. (See Case No. VI.)

Au contraire, the fat people are consumed with a desire to grow thin. Excessive fat is always a sign of perverted nutrition or of inferior quality of blood. Fat people, especially those who get fat early in life, have not good prospects of longevity. Insurance companies charge them a much higher premium. In treating such cases the cause of increasing fatness must be found out and treated accordingly. M. Zola, Mr. Labouchere, and other famous characters have been most successful in reducing their bulk. When fatness depends either on functional derangements of the digestive organs or on unhealthy qualities of blood, a course of the Carlsbad waters are most efficacious. The Marienbad waters are even more so. They act, of course, in the usual way, by setting right the deranged digestive organs and purifying the disordered blood.

These antagonistic effects of Carlsbad in obesity and leanness, in plethora and anæmia, in diarrhœa and in constipation are remarkable and worthy of note. "This was sometime a paradox, but now the time gives it proof."

Of the merits of Ebstein's and other systems of banting I can say little. It is as efficacious as any other plan to *abstain from fluid of all kinds during meals*, and not to take any until two or three hours later.

Science has recently placed in our hands a medicine which has the remarkable power of reducing body weight rapidly, without being in itself disagreeable or inconvenient to take, whilst there is no

necessity to submit the patient to any irksome system of dietary; he is left free to eat and drink whatever he pleases: I allude to the extract of thyroid gland. This is made up in tabloids which can be carried about loose in the waistcoat pocket and taken unobserved even when dining out. These **thyroid tabloids** can be procured from any chemist. They should be taken only under the directions of a medical man, however, and their effects should be carefully watched by him. They are not by any means devoid of danger.

CASE VII.—Mrs. ——, aged thirty, weight sixteen stone, complained of a common uterine disorder. Her gums and mouth were ulcerated, and her blood in a very bad state. Her great bulk prevented her being able to move about much or take any exercise. As the treatment of her case extended over some months, I determined to get her bulk reduced, and put her on a mild course of Carlsbad, which improved her blood and digestion greatly. To effect a more rapid diminution in weight two thyroid tabloids were given every morning. She rapidly thinned down without getting too weak or low, and about four months later I heard of her being able to ride and play tennis again.

Hints to Retiring Officials.—The fitness of a patient to winter in England after many years of Indian service is a point often difficult to determine, even for a physician of experience and skill. He will be greatly aided by a concise written statement of the medical history of the case.

When the internal organs are undermined by long tropical residence, transference to a cold climate often results in death or serious illness. The daily papers furnish us with numerous instances of such cases.

In giving advice to such a case the physician must

be guided by the presence or absence of any enlargement of the liver or spleen, of malarial degeneration of the heart, of chronic diarrhœa or dysentery, of kidney mischief, or of threatened pulmonary trouble. The personal equation in each case is a powerful determining factor. It must also be remembered that after the age of forty has been reached the recuperative powers begin to decline apace, and that great reparative changes cannot be depended upon to occur with the same certainty as in early life.

About three years in a good climate are necessary to work the malaria out of the system of a man of about forty. A yearly course at Vichy or Carlsbad greatly accelerates the process. Retired officials should not winter in England for the first two or three years if delicate.

If there is organic disease of any organ or malarial degeneration of the heart, the idea of retiring to a cold country should be permanently abandoned. Persistence in doing so will only end in disaster, removing perhaps the bread-winner from a sphere of usefulness to his own family he could in a milder climate have occupied for many years. When men have families depending on a continuance of their pension for education and a start in life, these points all become of the most vital importance.

Tropical service lays its indelible mark on most of us, and few return home with constitutions unimpaired. There are, of course, some remarkable exceptions—men of such pristine vitality and constitutional vigour that nothing affects them much.

Wasted Furlough.—Many persons live in the tropics for six or seven years without suffering from

actual attacks of ague. Their constitutions have nevertheless become affected. When they go home on furlough to a cold climate they may be prostrated by frequently recurring attacks of ague. Their furlough is thus wasted ; they return to the tropics unimproved in health, and soon break down again. These cases are always benefited by a course of hydropathic treatment, followed by a course at Carlsbad.

So many coming home on leave from the tropics, spend it in a ceaseless rush of town gaieties or society pleasures, involving late hours, loss of sleep and rest, and more food, drink, and smoking than can be good for any one.

The mere change to the air of one's native land, and the mental influence of its associations are alone, of course, highly beneficial in many cases, but if the health is failing, a society life in a city, is distinctly a great mistake.

The **worst defect** any one living **in the tropics** can have **is a feeble or bad digestion.** The digestive organs are those first and most powerfully attacked by adverse climatic influences. This **fact** should be **carefully considered in selecting a tropical career** for young men. A pale, anæmic, sallow youth with perhaps bad teeth, a history of frequent attacks of indigestion, diarrhœa, or slight jaundice, who gets upset by articles of food others can with impunity take, would be very ill-advised to go to the tropics. The greater warmth, the open-air life, the greater amount of sunshine and a pleasant, agreeable life might for a time do such a youth immense good, but it would not last long, and the adverse climatic influences would tell on him irreparably within a year or

two. For such a case the healthier parts of California, New Zealand, Australia, or British Columbia would be most suitable. No general rule can, however, be laid down for such cases, as so much depends on the individuality—that individuality which is such a subtle, baffling factor to doctors and laymen alike. I have known strumous boys to get on excellently in the tropics; but they were strumous boys who had good digestions, and were not subject to gastro-intestinal catarrhs.

There are some cases of bad digestion dependent on poor circulation, others on an indoor life, in a cold, grey, damp climate. These cases will improve immensely in the healthy parts of India or the tropics, gain in colour, weight, vigour, and activity. The whole question, then, of the suitability of a youth for a tropical career can thus be seen to be beset with difficulties and uncertainties. Almost the only certainties on which we can rely in giving an opinion, are the states of the digestive organs and teeth, and the muscular development and physique of the individual.

APPENDIX.

Right Lumbar Colotomy for Chronic Dysentery.—Since my remarks on this subject on p. 154 went to press, Dr. Hale White and Mr. Golding Bird have published in the *British Medical Journal* of May 20, 1899, an account of three further successes of this treatment for membranous colitis. This makes five English cases and one German case now reported. Analogy between membranous and mucous colitis leads us to anticipate a great future for this treatment. One of the cases now reported had suffered for twenty years—yet a complete cure resulted, and the patient can now ride a bicycle. The artificial anus is kept open for a minimum period of six months. Situated on the side and discharging only solid fæces, it gives rise to little inconvenience.

These cases mark a brilliant and impressive forward step in the treatment of colitis—where inevitable failure has almost always resulted heretofore. The idea originated with Dr. Hale White, who observed that the colon was not necessary for the maintenance of perfect health, that many of the slighter cases of chronic dysentery lived for very long periods, and that some were cured by prolonged milk diet and rest in bed. Where this did not sufficiently rest the colon to enable the ulcers to heal, he proposed colotomy, so as to give the lower colon absolute physiological rest. Unless as a palliative, I fear, however, that this treatment must be limited to cases of dysentery in which the lower end of the ileum or the cæcum are not

affected. To relieve these conditions an ileotomy or cæcotomy would be necessary. These openings would discharge fluid fæces and give rise to the most dreadful irritative eczema and other discomforts, which would wear out many chronic dysenterics before they had endured them for six months.

Many chronic dysenterics develop more or less "sprue" (psilosis) or allied degenerative conditions of the intestines and atrophy or fatty degeneration of the liver. These cases have large white or pale-coloured motions containing little or no biliary pigment. They do badly on farinaceous food. It produces, if taken in any save the smallest quantity, white, sour, fermenting motions, which are sometimes solid or semi-solid. For such degenerative and atrophic conditions, as well as for "sprue" itself, Carlsbad treatment is unsuitable. In the very early stages of these affections, when they begin as gastro-intestinal catarrhs of great intensity with very white motions, it may be used with some benefit; but great care should be exercised in seeing that Carlsbad is not continued once the condition of psilosis or true "sprue" is fully established. The raw, red appearance of the tongue would in such cases be one of the surest indications of this state having supervened. Unfortunately, in many cases, a very considerable degree of degeneration and atrophy of the bowel may occur without this symptom appearing, and it is then difficult, if not impossible, to say when the stage of gastro-intestinal catarrh has passed on into one of true "sprue."

These cases are much injured by tobacco and alcohol in all forms as well as by farinaceous food.

The white diarrhœa alluded to on p. 169 is merely the exaggerated gastro-intestinal catarrh so common in the tropics, and must not be regarded as true sprue. It is apt however in time, if unchecked, to develop into true sprue.

Of "sprue" in the drier parts of India we see comparatively little. In the damper and more equatorial parts of the tropics, and especially in Hong Kong and along the Chinese littoral, in Java and Borneo, it is a very common and most dangerous disease. If patients are not at once put on milk diet and sent out of the tropics it is most apt to become incurable and end fatally.

Beyond the few remarks on sprue given on p. 167, I have purposely avoided the subject in the text, as the fully established complaint is not amenable to Carlsbad treatment. The great difficulty seems to be in establishing a flow of bile, and this leads us to infer that in many cases the state of the bowel is associated with one of atrophy of the liver.

I have introduced these remarks here, as these atrophic and degenerative intestinal and hepatic changes are certain to be met with by every tropical practitioner, and an early recognition of the fact that they are not to be treated by Carlsbad will prove to be of use. Neither are they likely to benefit from colotomy, except, perhaps, occasionally in their earlier stages.

Tepid or cold percussion douches are of the greatest use **for nervousness** of a functional nature in men or women, the result of overwork, for nervous debility, for neurasthemia and hysteria (of certain kinds).

The **habitual use of sugar** in beverages, jams, puddings, or as sweetmeats, is not alone unnecessary for adults, but is, in many cases, distinctly injurious. Fortunately this is now becoming very generally known and the abstainers from sugar are a growing class.

For the very young, for adolescents, for troops on active service, for day labourers, for long-distance cyclists, or others engaged in prolonged physical strain, it is, however, a necessity almost.

In the majority of non-exercising consumers, it simply produces acidity in the digestive organs, feeds up the

bacteria which flourish there, and produces flatulence, intestinal catarrh, anæmia and ill-health.

It is now, however, universally recognized that, for the majority of persons undergoing sustained exertion, it is a capital adjunct to a labouring diet, supplying the material necessary to sustain the energy of muscular effort.

During the Indian Famine of 1896–97, when the price of flour and sugar had reached an exact equality, viz. 1¼*d.* per pound, I gave nearly one thousand prisoners in the Umbala Jail, India, an early morning ration of an ounce of sugar, in lieu of their small early morning ration of parched grain—a very indigestible form of dried pea or vetch. They worked better on the sugar, gained in weight, and liked it more. Natives of India seem to know the dietetic value of sugar in a labouring diet, and take large quantities of it in their own homes—when they can afford it. They always take hot milk with sugar in it, in exactly the same way as is done in France and in other Continental countries.

Recently some interesting experiments were made in the German Army as to the value of sugar for troops on field manœuvres, and the results are said to have been most satisfactory. The best form in which to give it to troops seems to be as chocolate containing a large admixture of sugar (see p. 69).

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